UNITED STATES DEPARTMENT OF AGRICULTURE

DEPARTMENT BULLETIN No. 1199

Washington, D. C. ▼ May 26, 1924

LIST OF BULLETINS OF THE AGRICULTURAL EXPERIMENT STATIONS IN THE UNITED STATES FROM THEIR ESTABLISHMENT TO THE END OF 1920

▼

PREPARED IN THE OFFICE OF EXPERIMENT STATIONS

WASHINGTON
GOVERNMENT PRINTING OFFICE
1924

ADDRESS LIST OF AGRICULTURAL EXPERIMENT STATIONS.

ALABAMA.—*Auburn*, M. J. Funchess,[1] Director.
ALASKA.—*Sitka*, C. C. Georgeson, Agronomist in charge.
ARIZONA.—*Tucson*, J. J. Thornber, Director.
ARKANSAS.—*Fayetteville*, Dan T. Gray, Director.
CALIFORNIA.—*Berkeley*, C. M. Haring,[1] Director.
COLORADO.—*Fort Collins*, C. P. Gillette, Director.
CONNECTICUT.—*New Haven*, W. L. Slate, jr., Director; *Storrs*, W. L. Slate, jr., Director.
DELAWARE.—*Newark*, C. A. McCue, Director.
FLORIDA.—*Gainesville*, Wilmon Newell, Director.
GEORGIA.—*Experiment*, H. P. Stuckey, Director.
GUAM.—*Guam*, C. W. Edwards, Animal husbandman in charge.
HAWAII.—*Honolulu*, J. M. Westgate, Agronomist in charge.
IDAHO.—*Moscow*, E. J. Iddings, Director.
ILLINOIS.—*Urbana*, H. W. Mumford, Director.
INDIANA.—*La Fayette*, G. I. Christie, Director.
IOWA.—*Ames*, C. F. Curtiss, Director.
KANSAS.—*Manhattan*, F. D. Farrell, Director.
KENTUCKY.—*Lexington*, T. P. Cooper, Director.
LOUISIANA.—*Baton Rouge*, W. R. Dodson, Director.
MAINE.—*Orono*, W. J. Morse, Director.
MARYLAND.—*College Park*, H. J. Patterson, Director.
MASSACHUSETTS.—*Amherst*, S. B. Haskell, Director.
MICHIGAN.—*East Lansing*, R. S. Shaw, Director.
MINNESOTA.—*University Farm, St. Paul*, W. C. Coffey, Director.
MISSISSIPPI.—*A. and M. College*, J. R. Ricks, Director.
MISSOURI.—*Columbia*, F. B. Mumford, Director.
MONTANA.—*Bozeman*, F. B. Linfield, Director.
NEBRASKA.—*Lincoln*, E. A. Burnett, Director.
NEVADA.—*Reno*, S. B. Doten, Director.
NEW HAMPSHIRE.—*Durham*, J. C. Kendall, Director.
NEW JERSEY.—*New Brunswick*, J. G. Lipman, Director.
NEW MEXICO.—*State College*, Fabian Garcia, Director.
NEW YORK.—*Geneva* (State Station), R. W. Thatcher, Director; *Ithaca* (Cornell Station), W. R. Thatcher, Director.
NORTH CAROLINA.—*Raleigh*, B. W. Kilgore, Director.
NORTH DAKOTA.—*Agricultural College*, F. F. Trowbridge, Director.
OHIO.—*Wooster*, C. G. Williams, Director.
OKLAHOMA.—*Stillwater*, C. T. Dowell, Director.
OREGON.—*Corvallis*, J. T. Jardine, Director.
PENNSYLVANIA.—*State College*, R. L. Watts, Director.
PORTO RICO.—*Mayaguez*, D. W. May, Agronomist in charge.
RHODE ISLAND.—*Kingston*, B. L. Hartwell, Director.
SOUTH CAROLINA.—*Clemson College*, H. W. Barre, Director.
SOUTH DAKOTA.—*Brookings*, J. W. Wilson, Director.
TENNESSEE.—*Knoxville*, C. A. Mooers, Director.
TEXAS.—*College Station*, B. Youngblood, Director.
UTAH.—*Logan*, William Peterson, Director.
VERMONT.—*Burlington*, J. L. Hills, Director.
VIRGINIA.—*Blacksburg*, A. W. Drinkard, jr., Director.
VIRGIN ISLANDS, U. S. A.—*St. Croix*, J. B. Thompson, Agronomist in charge.
WASHINGTON.—*Pullman*, E. C. Johnson, Director.
WEST VIRGINIA.—*Morgantown*, H. G. Knight, Director.
WISCONSIN.—*Madison*, H. L. Russell, Director.
WYOMING.—*Laramie*, J. A. Hill, Director.

---

[1] Acting director.

UNITED STATES DEPARTMENT OF AGRICULTURE

DEPARTMENT BULLETIN No. 1199

Washington, D. C. ▼ May 26, 1924

BULLETINS OF THE EXPERIMENT STATIONS.

This bulletin lists approximately 12,500 of the 17,500 or more publications of the State experiment stations (including those of Alaska and the insular possessions) from 1875 to 1920, inclusive. It is confined primarily to the regular bulletin series of the stations. It does not include circulars and other more or less ephemeral publications; annual reports, except such as are numbered as bulletins; nor scientific contributions from the stations which have appeared in the Journal of Agricultural Research or other scientific periodicals.

The work of preparing the list has been done at intervals of several years and by a number of different persons, but mainly by Miss E. Lucy Ogden, former librarian of the States Relations Service, and Miss Martha L. Gericke, present librarian of the Office of Experiment Stations.

ALABAMA.

Agricultural Experiment Station of the Alabama Polytechnic Institute, Auburn.

BULLETINS (FIRST SERIES), 1883–1885.

1. [Announcement of lines of work to be undertaken by the station.] German carp. By J. S. Newman.—Experiments in wheat. By W. C. Stubbs. 1883.
2. Economy in fertilization. By J. S. Newman.—[Commercial fertilizers.] By W. C. Stubbs.—Synopsis of meteorological record [1881–83]. By P. H. Mell. 1884.
3. Catalogue of fruits. By J. S. Newman.—Inquiry and answer department.—German carp.—Experiments with corn and ensilage. By W. C. Stubbs. 1884. Also included in a circular of the Commissioner of Agriculture.
4. Experiments in cotton. By W. C. Stubbs.—Answers to inquiries.—Agricultural camp meetings. By J. S. Newman. 1884. Published as a bulletin of the Alabama State Department of Agriculture.
5. Report on the phosphates of Alabama. By W. C. Stubbs [E. A. Smith and W. L. Broun, jr.].—Agricultural and economic value of these phosphatic deposits. 1884. Published as a bulletin of the State Department of Agriculture.
6. [Commercial fertilizers. By W. C. Stubbs].—Experiments [with fertilizers] conducted by J. C. Nicholson. 1884. Published as a bulletin of the Alabama State Department of Agriculture.
7. [Commercial fertilizers: experiments, analyses, etc.] By J. S. Newman. 1885. Published as a bulletin of the Alabama State Department of Agriculture.
8. "The boll worm" (*Heliothis armigera* Huebner) and "The cotton worm" (*Aletia argillacea* Huebner, *Aletia xylina* Say). Mar., 1885. Published as a bulletin of the Alabama State Department of Agriculture.
9. Commercial fertilizers; marls and phosphate; mucks. By W. C. Stubbs. 1885. Published as a bulletin of the Alabama State Department of Agriculture.
10. Nitrogenous manures. By W. C. Stubbs. Aug., 1885. Published as a bulletin of the Alabama State Department of Agriculture.

BULLETINS (SECOND SERIES), 1885–1887.

1. The grape. By J. E. Saunders. Sept., 1885. Published as a bulletin of the Alabama State Department of Agriculture.
2. Fertilization. By E. C. Betts and W. H. Jordan.—The cotton plant and its products. By Prof. White. [1885?] Published as a bulletin of the Alabama State Department of Agriculture.
3. Fertilizers. By N. T. Lupton. Dec. 16, 1885. Published as a bulletin of the Alabama State Department of Agriculture.
4. Gardening. By E. C. Betts. Dec., 1886. Published as a bulletin of the Alabama State Department of Agriculture.
5. Experiments for clubs. By J. S. Newman. Jan., 1886. Published as a bulletin of the Alabama State Department of Agriculture.

6. Experiments in cotton culture, 1884 and 1885. By J. S. Newman. Feb., 1886. Published as a bulletin of the Alabama State Department of Agriculture.
7. Improvement of soils, etc. By N. T. Lupton. Mar., 1886. Published as a bulletin of the Alabama State Department of Agriculture.
8. Guaranteed analyses of commercial fertilizers, season 1886–87. By E. C. Betts. Jan. 18, 1887.
9. [Miscellaneous analyses.] By N. T. Lupton. Feb., 1887. Published as a bulletin of the Alabama State Department of Agriculture.

BULLETINS FOR 1887.

1. Report of experiments with oats; report from the Canebrake Experiment Station. By J. S. Newman. Jan. 6, 1887.
2. [Experiments with vegetables and strawberries.] By J. S. Newman. Feb. 11, 1887.
3. Experiments with corn [at Auburn and Canebrake stations] 1886. By J. S. Newman. Mar. 3, 1886 [i. e. 1887].
4. Experiments with cotton [at Auburn and Canebrake stations] 1886. By J. S. Newman. Apr. 15, 1887.
5. Experiments with sweet potatoes and sugar cane, 1876 [i. e. 1886]. By J. S. Newman. July 15, 1887.
6. Experiments with oats [at Canebrake and Auburn stations]. By J. S. Newman. Sept., 1887.
7. Experiments with corn conducted on the Canebrake Experiment Station, 1887. By J. S. Newman. Oct., 1887.
8. Analyses of fertilizers for season of 1887–88. By R. F. Kolb. Dec. 5, 1887. Published as a bulletin of the Alabama State Department of Agriculture.

BULLETINS FOR 1888.

1. Experiments with corn. By J. S. Newman. Jan. 6, 1888.
2. Small fruits, vegetables, etc. By J. S. Newman. Jan. 25, 1888.
3. Cotton experiments at the Canebrake station. By J. S. Newman. Feb., 1888.
4. [Experiments with fertilizers for cotton; relation of different parts of the hog to the whole dressed weight.] Apr., 1888.
5. Effect of fertilizers upon sweet potatoes. June 26, 1888.

BULLETINS (NEW SERIES).

After being dropped and resumed from time to time, the designation of "new series" was finally abandoned beginning with No. 27.

1. Report of Agricultural Experiment Station, Agricultural and Mechanical College, Auburn, Ala. July, 1888.
2. Report of Agricultural Experiment Station, Agricultural and Mechanical College, Auburn, Ala. Oct., 1888.
3. Report of Agricultural Experiment Station, Agricultural and Mechanical College, Auburn, Ala. Jan., 1889. Subjects: Report of experiments with corn, sweet potatoes, ground peas, turnips, and grapes; anaylses of fertilizers, soils, etc.; weeds of Alabama (cont.); meteorology.
4. Strawberry culture; grape culture and pruning; raspberry culture. By J. S. Newman. Feb., 1889.
5. Cotton; pigs. By J. S. Newman.—[Turnips, keeping qualities of varieties.]—Cattle. By Isaac Ross.—Analyses. By N. T. Lupton.—Meteorology. By P. H. Mell and T. B. Samford. April, 1889.
6. Grasses of Alabama and their cultivation. By P. H. Mell. July, 1889.
7. Experiments with methods of setting and churning milk. By Isaac Ross.—An experiment in setting milk. By J. W. Hart.—Report of experiments with varieties of vegetables. By James Clayton.—Department of meteorology. By P. H. Mell.—Directions for sending specimens of diseased plants, etc., to the experiment station. By G. F. Atkinson. Oct., 1889.
8. Commercial fertilizers. By N. T. Lupton. Nov., 1889.
9. Nematode root galls. A preliminary report on the life history and metamorphosis of a root gall nematode *Heterodera radicicola* (Greeff) Müll. and the injuries produced by it on the roots of various plants. By G. F. Atkinson. Dec., 1889.
10. Grape culture. By J. S. Newman. Jan., 1890. Not to be confused with Bul. 10 of the Alabama State Department of Agriculture, July, 1896, the cover of which bears also the name of the Agricultural Experiment Station.
11. Peaches and plums. By J. S. Newman. Feb., 1890.
12. Cooperative soil tests, 1889. By J. S. Newman. Feb., 1890.
13. Microscopic study of certain varieties of cotton. By P. H. Mell. Mar., 1890.
14. Pea vines as a fertilizer [commercial fertilizers]. By N. T. Lupton. Apr., 1890.
15. Insecticides: Kerosene emulsion, how to make and apply it. By G. F. Atkinson. Apr., 1890.
16. Corn, cotton, rye, chufas; conclusions from 6 years of experiments [with fertilizers]. By J. S. Newman. June, 1890.
17. Dry application of Paris green and London purple for the cotton worm. By G. F. Atkinson.—Report of the Alabama weather service. By P. H. Mell. July, 1890.
18. Climatology of Alabama. By P. H. Mell. Aug., 1890.
19. Roads and road making. By J. H. Lane.—Meteorology. By P. H. Mell. Oct., 1890.
20. Small fruits, melons, and vegetables. By J. S. Newman and James Clayton.—Report of the weather service. By P. H. Mell.—[Table of soil temperatures. By A. M. Lloyd.] Nov., 1890.
21. A new root rot disease of cotton. By G. F. Atkinson.—Report of the weather service. By P. H. Mell.—[Table of soil temperatures. By A. M. Lloyd.] Dec., 1890.
22. Experiments with cotton. By J. S. Newman and James Clayton.—Report of Alabama weather service. By P. H. Mell.—[Table of soil temperatures. By A. M. Lloyd.] Jan., 1891.
23. Cooperative soil tests of fertilizers. By J. S. Newman.—Report of Alabama weather service. By P. H. Mell.—[Table of soil temperatures. By A. M. Lloyd.] Feb., 1891.
23. [i. e. 24]. Dairying and breeding. By Isaac Ross.—Report of Alabama weather service. By P. H. Mell.—[Table of soil temperatures. By A. M. Lloyd.] Feb. [i. e. Mar.], 1891.
25. Effects on butter by feeding cottonseed and cottonseed meal. By N. T. Lupton. Apr., 1891.
26. Commercial fertilizers. By N. T. Lupton. Apr., 1891.
27. Black "rust" of cotton. By G. F. Atkinson. May, 1891.
28. Watermelons and cantaloupes. By J. S. Newman and James Clayton. Nov., 1891.
29. Grapes, raspberries, and strawberries. By J. S. Newman and James Clayton. Nov., 1891.
30. Apples, pears, peaches, and plums. By J. S. Newman. Nov., 1891.
31. Irish and sweet potatoes. By J. S. Newman and James Clayton. Nov., 1891.
32. Corn, wheat, and oats. By J. S. Newman and James Clayton. Nov., 1891.
33. Cotton. By J. S. Newman and James Clayton. Dec., 1891.
34. Cooperative soil-test experiments for 1891. Jan., 1892.

35. Glanders. By C. A. Cary. Jan., 1892.
36. Some leaf blights of cotton. By G. F. Atkinson. Mar., 1892.
37. Tobacco. By A. J. Bondurant. Mar., 1892.
38. Fertilizers. By N. T. Lupton. July, 1892.
39. Wheat. By A. J. Bondurant and James Clayton. Nov., 1892.
40. Cotton experiments. By A. J. Bondurant and James Clayton. Jan., 1893.
41. Some diseases of cotton. By G. F. Atkinson. Dec., 1892.
42. Cooperative soil-test experiments for 1892. By A. J. Bondurant and James Clayton. Jan., 1893.
43. Eye diseases of domestic animals. By C. A. Cary. May, 1893.
44. Tobacco plant. By A. J. Bondurant. May, 1893.
45. Injurious and beneficial insects: Some insect pests of the farm and garden. By J. M. Stedman. June, 1893.
46. Rye vs. ensilage: The effect of rye and ensilage on the yield of milk. By A. J. Bondurant and A. F. Cory. June, 1893.
47. Fruits. By A. J. Bondurant and James Clayton. July, 1893.
48. The effect of decomposing organic matter on natural phosphates; commercial fertilizers. By N. T. Lupton. July, 1893. Issued by the Alabama State Department of Agriculture.
49. Varieties of wheats and grasses. By A. J. Bondurant and James Clayton. Oct., 1893.
50. Fruit-tree blight in general. By J. M. Stedman. Nov., 1893.
51. Vegetables. By A. J. Bondurant and James Clayton. Oct., 1893.
52. Corn and cotton. By A. J. Bondurant. Jan., 1894.
53. A new milk or water sterilizer. By C. A. Cary. Jan., 1894.
54. Tobacco. By A. J. Bondurant. Feb., 1894.
55. A new disease of cotton: Cotton boll rot. By J. M. Stedman. Apr., 1894.
56. Experiments in crossing for the purpose of improving the cotton fiber. By P. H. Mell. May, 1894.
57. Fertilizers required by cotton as determined by the analysis of the plant. By J. T. Anderson. May, 1894.
57. Fertilizers. By B. B. Ross. July, 1894. Issued by the Alabama State Department of Agriculture.
58. Paris green: Composition and adulterations. By B. B. Ross. Aug., 1894.
59. Cooperative soil tests of corn. By A. J. Bondurant. Jan., 1895.
60. Experiments on foreign seeds. By P. H. Mell. Jan., 1895.
61. Insects injurious to stored grain. By J. M. Stedman. Jan., 1895.
62. Corn and cotton. By A. J. Bondurant. Feb., 1895.
63. Fertilizers, commercial and domestic. By B. B. Ross. Feb., 1895.
64. Tobacco. By A. J. Bondurant. Feb., 1895.
65. Cooperative seed tests. By A. J. Bondurant. June, 1895.
66. Cane sirup. By B. B. Ross. Oct., 1895.
67. Bovine tuberculosis. By C. A. Cary. Nov., 1895.
68. Pig feeding experiments. By C. A. Cary. Jan., 1896.
69. Treatment of some fungous diseases. By L. M. Underwood and F. S. Earle. Feb., 1896.
70. The flora of Alabama, Part V, Leguminosae and Rosaceae. By P. H. Mell. Mar., 1896.
71. Experiments with foreign cotton. By P. H. Mell. Apr., 1896.
72. A study of skin tumors of horses and mules in Alabama. By S. L. Coleman. July, 1896.
73. Edible fungi, a wasted food product. By L. M. Underwood. Oct., 1896.
74. Flour considered from the standpoint of nutrition. By L. M. Underwood. Oct., 1896.
75. Experiments with corn, 1896. By J. F. Duggar. Dec., 1896.
76. Experiments with cotton. By J. F. Duggar. Jan., 1897.
77. The San José scale—a warning to the fruit growers of Alabama; some other insect pests; the tomato worm; grape leaf-hoppers; cabbage worms. By C. F. Baker. Jan., 1897.
78. Cooperative fertilizer experiments with cotton in 1896. By J. F. Duggar. Feb., 1897.
79. Some horticultural suggestions. By F. S. Earle. Mar.,1897.
80. A preliminary list of Alabama fungi. By L. M. Underwood and F. S. Earle. Apr., 1897.
81. Meat inspection. By C. A. Cary. May, 1897.
82. Corn, cowpeas, and wheat bran for fattening pigs. By J. F. Duggar. May, 1897.
83. Hybrids from American and foreign cotton. By P. H. Mell. June, 1897.
84. Turnips. By F. S. Earle. Aug., 1897.
85. Japanese plums. By F. S. Earle. Aug., 1897.
86. More about the San José scale; a sweet-potato pest; regarding carbon bisulphid, insecticides and pumps in general. By C. F. Baker. Aug., 1897.
87. Soil inoculation for leguminous plants. By J. F. Duggar. Aug., 1897.
88. Experiments with corn. By J. F. Duggar. Dec., 1897.
89. Experiments with cotton. By J. F. Duggar. Jan., 1898.
90. The peach tree borer; the fruit bark beetle. By C. F. Baker. Jan., 1898.
91. Cooperative fertilizer experiments with cotton in 1897. By J. F. Duggar. Feb., 1898.
92. Experiments with lime on acid soils. By F. S. Earle and A. W. Orr. Apr., 1898.
93. Peanuts, cowpeas, and sweet potatoes as food for pigs. By J. F. Duggar. Apr., 1898.
94. Strawberries. By F. S. Earle. Nov., 1898.
95. Experiments with oats. By J. F. Duggar. Aug., 1898.
96. Experiments with crimson clover and hairy vetch. By J. F. Duggar. Aug., 1898.
97. Dairy and milk inspection. By C. A. Cary. Sept., 1898.
98. Orchard notes. By F. S. Earle. Nov., 1898.
99. Cotton rust. By F. S. Earle. Dec., 1898.
100. Lawns, pastures, and hay. By P. H. Mell. Dec., 1898.
101. Experiments with cotton, 1898. By J. F. Duggar. Jan., 1899.
102. Cooperative fertilizer experiments with cotton, 1898. By J. F. Duggar. Feb., 1899.
103. Experiments in syrup making. By B. B. Ross. Mar., 1899.
104. Velvet beans. By J. F. Duggar. Apr., 1899.
105. Winter pasturage, hay, and fertility afforded by hairy vetch. By J. F. Duggar. Aug., 1899.
106. Orchard notes. By F. S. Earle. Nov., 1899.
107. Results of experiments on cotton in Alabama. Introduction. P. H. Mell.—Varieties of cotton; preparation and cultivation of the soil for cotton; the manuring of cotton. By J. F. Duggar.—The diseases of cotton. By F. S. Earle.—Climatic conditions of the cotton belt (condensed from U. S. Dept. Agr., Weather Bur. Bul. 8); the improvement of the cotton by hybridization and selection. By P. H. Mell.—The cotton plant considered in some of its chemical relations. By B. B. Ross [and others]. Dec., 1899.
108. Tomatoes. By F. S. Earle. Apr., 1900.
109. Strawberries. By F. S. Earle. July, 1900.
110. Grapes. By F. S. Earle and C. F. Austin. Dec., 1900.
111. Corn culture. By J. F. Duggar. Dec., 1900.
112. Orchard notes. By F. S. Earle. Dec., 1900.

113. Cooperative experiments with cotton in 1899–1900. By J. F. Duggar. Feb., 1901.
114. Feeding experiments with dairy cows. By J. F. Duggar and R. W. Clark. May, 1901.
115. Commercial fertilizers. By J. T. Anderson. Aug., 1901.
116. Texas, or acclimation fever. By C. A. Cary. Sept., 1901.
117. Orchard notes. By C. F. Austin. Dec., 1901.
118. Cowpea culture. By J. F. Duggar. Jan., 1902.
119. The flora of the metamorphic region of Alabama. By F. S. Earle. Apr., 1902.
120. The cowpea and the velvet bean as fertilizers. By J. F. Duggar. Apr., 1902.
121. Dairy herd record and creamery notes. By R. W. Clark. Nov., 1902.
122. Grazing and feeding experiments with pigs. By J. F. Duggar. Jan., 1903.
123. Vetch, cowpea, and soybean hay as substitutes for wheat bran. By J. F. Duggar. Apr., 1903.
124. The horticultural law; notes on some of the insects and fungous diseases affecting horticultural crops By R. S. Mackintosh. May, 1903.
125. Some diseases of cattle. By C. A. Cary and F. G. Matthews. June, 1903.
126. A leaf-curl disease of oaks. By E. M. Wilcox. Oct., 1903.
127. Alfalfa in Alabama. By J. F. Duggar. Feb., 1904.
128. Feeding and grazing experiments with beef cattle. By J. F. Duggar [R. W. Clark and J. M. Jones]. June, 1904.
129. The Mexican cotton boll-weevil. By E. M. Wilcox. Aug., 1904.
130. Tests of varieties of cotton in 1904. By J. F. Duggar. Jan., 1905.
131. Cooperative fertilizer experiments with cotton in 1901, 1902, 1903, and 1904. By J. F. Duggar. Feb., 1905.
132. Diseases of the apple, cherry, peach, pear, and plum with methods of treatment. By E. M. Wilcox. Apr., 1905.
133. Manufacture of cane sirup. By B. B. Ross. Dec., 1905.
134. Corn culture. By J. F. Duggar. Dec., 1905.
135. Diseases of sweet potatoes in Alabama, a preliminary report. By E. M. Wilcox. June, 1906.
136. Chicken pox or sorehead in poultry. By C. A. Cary. Aug., 1906.
137. Experiments with oats. By J. F. Duggar. Sept., 1906.
138. Variety tests with cotton and corn; Williamson method of corn culture. By J. F. Duggar and L. N. Duncan. Dec., 1906.
139. Injurious insects and their control. By W. T. Clarke. Apr., 1907.
140. Descriptions and classifications of varieties of American upland cotton. By J. F. Duggar. July, 1907.
141. Texas or tick fever. By C. A. Cary. July, 1907.
142. Corn breeding in Alabama. By E. M. Wilcox. Mar., 1908.
143. Feeds supplementary to corn for southern pork production. By D. T. Gray, J. F. Duggar, and J. W. Ridgway. July, 1908.
144. The San José scale and lime-sulfur wash. By W. E. Hinds. Feb., 1909.
145. Local fertilizer experiments with cotton in 1905, 1906, 1907, and 1908. By J. F. Duggar. Feb., 1909.
146. Facing the boll-weevil problem in Alabama. By W. E. Hinds. June, 1909.
147. Crimson clover. By J. F. Duggar. Aug., 1909.
148. Raising lambs in Alabama: Maintenance rations for ewes; feeding cottonseed meal to pregnant ewes. By D. T. Gray and J. W. Ridgway. Oct., 1909.
149. Tests of varieties of cotton in 1909. By J. F. Duggar and E. F. Cauthen. Feb., 1910.
150. Raising beef cattle in Alabama. By D. T. Gray and W. F. Ward. June, 1910.
151. Wintering steers in Alabama: Fattening cattle on pasture in Alabama. By D. T. Gray and W. F. Ward. June, 1910.
152. Self boiled lime sulphur and its use. By P. F. Williams and J. C. C. Price. Feb., 1911.
153. Experiments with cotton: Varieties, boll rot, wilt, phosphates. By J. F. Duggar and E. F. Cauthen. Feb., 1911.
154. Corn, soy-bean pastures, tankage, and cottonseed meal for fattening hogs. By D. T. Gray, J. W. Ridgway, and E. R. Eudaly. Feb., 1921.
155. The pecan in Alabama. By P. F. Williams. Mar., 1911.
156. Peach growing in Alabama. By P. F. Williams and J. C. C. Price. Sept., 1911.
157. The Satsuma orange. By P. F. Williams. Sept., 1911.
158. Fattening beef calves in Alabama. By D. T. Gray and W. F. Ward. Oct., 1911.
159. Heading off boll-weevil panic. By W. E. Hinds. Dec., 1911.
160. Local fertilizer experiments with cotton in south Alabama in 1911. By J. F. Duggar, J. T. Williamson, L. L. Glover, and E. Hodson. Dec., 1911.
161. Lime for Alabama soils. By J. F. Duggar and M. J. Funchess. Dec., 1911.
162. Local fertilizer experiments with cotton in north Alabama in 1911. By J. F. Duggar, J. T. Williamson, L. L. Glover and E. Hodson. Feb., 1912.
163. Steer feeding in Alabama. By D. T. Gray and W. F. Ward. Dec., 1911.
164. The cotton worm or "caterpillar" (*Alabama argillacea* Hubn.). By W. E. Hinds. Aug. 1, 1912.
165. Southern bur clover (*Medicaga maculata*). By E. F. Cauthen. Aug. 20, 1912.
166. Curing meat on the farm. By D. T. Gray and L. W. Summers. Nov., 1912.
167. Wintering pregnant ewes in Alabama. By D. T. Gray and L. W. Shook. Nov., 1912.
168. Fattening hogs in Alabama. By D. T. Gray, L. W. Summers, and L. W. Shook. Dec., 1912.
169. Local fertilizer experiments with cotton in south Alabama in 1912. By J. F. Duggar, J. T. Williamson, and L. J. Hawley. Jan., 1913.
170. Local fertilizer experiments with cotton in north Alabama in 1912. By J. F. Duggar, J. T. Williamson, and L. J. Hawley. Feb., 1913.
171. The biology or life history of the cattle tick as determined at Auburn, Ala. By H. W. Graybill and W. M. Lewallen.—Dipping vats and dips. By C. A. Cary. Feb., 1913.
172. Black spot of roses. By F. A. Wolf. Feb., 1913.
173. Oats: Experiments on culture, varieties, and fertilization. By J. F. Duggar and E. F. Cauthen. Sept., 1913.
174. Local fertilizer experiments with cotton in south Alabama in 1913. By J. F. Duggar, J. T. Williamson, and L. J. Hawley. Dec., 1913.
175. Local fertilizer experiments with cotton in north Alabama in 1913. By J. F. Duggar, J. T. Williamson, and L. J. Hawley. Jan., 1914.
176. Reducing insect injury to stored corn. By W. E. Hinds. Feb., 1914.
177. Raising and fattening beef calves in Alabama. By D. T. Gray and W. F. Ward. Mar., 1914.
178. Boll weevil effect upon cotton production. By W. E. Hinds. July, 1914.
179. Wheat in Alabama. By J. F. Duggar and E. F. Cauthen. Sept., 1914.
180. Leaf spot and some fruit rots of peanut (*Arachis hypogoea* L.). By F. A. Wolf. Dec., 1914.

181. Local fertilizer experiments with corn in south Alabama in 1911, 1912, 1913, and 1914. By J. F. Duggar and J. T. Williamson. Dec., 1914.
182. Local fertilizer experiments with corn in north Alabama in 1911, 1912, 1913, and 1914. By J. F. Duggar and J. T. Williamson. Dec., 1914.
183. Irish potatoes. By J. C. C. Price. Jan., 1915.
184. Local fertilizer experiments with sweet potatoes. By J. F. Duggar and J. T. Williamson. May, 1915.
185. Dipping vat for hogs and dips; hog worms, lice and mange; hog lots, houses and water supply. By C. A. Cary. July, 1915.
186. The grass worm or fall army worm (*Laphygma frugiperda*, S. A.). By W. E. Hinds and J. A. Dew. Sept., 1915.
187. Cabbage. By J. C. C. Price and G. V. Stelzenmuller. Jan., 1916.
188. Boll weevil in Alabama. By W. E. Hinds. March, 1916.
189. Wilt resistant varieties of cotton. By E. F. Cauthen. April, 1916.
190. Citrus canker. By F. A. Wolf. May, 1916.
191. (Technical Bul. 1.) The effects of certain organic compounds on plant growth: Coumarin, vanillin, pyridine, quinoline, dihydroxystearic acid, pyrogallol, etc. By M. J. Funchess. June, 1916.
192. Cottonseed meal compared with velvet beans for fattening steers. By G. S. Templeton and E. Gibbens. Nov., 1916.
193. Peanuts: Tests of varieties and fertilizers. By J. F. Duggar, E. F. Cauthen, J. T. Williamson, and O. H. Sellers. Feb., 1917. For popular edition see 194.
194. Growing peanuts in Alabama. By J. F. Duggar, E. F. Cauthen, J. T. Williamson, and O. H. Sellers. Feb., 1917. Popular edition of 193.
195. (Technical Bul. 2). The cause of the disappearance of cumarin, vanillin, pyridine, and quinoline in the soil. By W. J. Robbins. June, 1917.
196. (Technical Bul. 3). The nitrification of pyridine, quinoline, guanidine carbonate, etc., in soils. By M. J. Funchess. June, 1917.
197. Harvesting and storing sweet potatoes. By J. C. C. Price. Sept., 1917. Also popular edition.
198. Vevet beans compared with cottonseed meal for fattening steers. By G. S. Templeton and Ernest Gibbens.—Velvet beans versus cottonseed meal and corn as feeds for dairy cattle. By G. S. Templeton and H. C. Ferguson.—Velvet bean pasture compared with corn and dried blood; velvet bean meal compared with corn for fattening hogs. By G. S. Templeton. Nov., 1917.
199. Report on freeze injury to citrus trees for 1916 and 1917, with notes on orange culture in south Alabama. By O. F. E. Winberg, G. C. Starcher, and C. L. Isbell. Mar., 1918.
200. Tests of varieties of corn at Auburn. By E. F. Cauthen. Mar., 1918.
201. (Technical Bul. 4). The development of soluble manganese in acid soils as influenced by certain nitrogenous fertilizers. By M. J. Funchess. June, 1918.
202. Growing soy beans in Alabama. By E. F. Cauthen. June, 1918. A popular edition of 203.
203. Soy beans in Alabama. By E. F. Cauthen. Nov., 1918.
204. (Technical Bul. 5). The destruction of vanillin in the soil by the action of soil bacteria. By W. J. Robbins. June, 1918.
205. Variety tests of wheat. By E. F. Cauthen. Sept., 1918.
206. Grazing peanuts with hogs versus marketing a crop of peanuts. By G. S. Templeton. Dec., 1918.
207. Local fertilizer experiments with cotton in south Alabama, 1914–1918, inclusive. By J. T. Williamson and J. F. Duggar. Dec., 1918.
208. Comparison of peanut meal, cottonseed meal, velvet bean meal, ammonium sulphate, and nitrate of soda as fertilizers for corn and cotton. By E. F. Cauthen. Feb., 1919.
209. Time of applying nitrate of soda to cotton: Experiments at Auburn, 1910–1916. By E. F. Cauthen.—Experiments in various Alabama counties, 1914–1919. By J. T. Williamson. Apr., 1920.
210. Time of applying nitrate of soda to corn: Experiments at Auburn, 1910–1916. By E. F. Cauthen.—Experiments in various Alabama counties, 1914–1919. By J. T. Williamson. Apr., 1920.
211. The grape (reprint). By J. C. C. Price. Dec., 1920.
212. Poisoning the boll weevil: Pt. I, Results for 1918 and 1919; Pt. II, results for 1920. By W. E. Hinds and F. L. Thomas. Nov., 1920.
213. Improving the quality of peanut-fed hogs by finishing in dry lot on corn and tankage, corn and cottonseed meal, corn and velvet beans. By G. S. Templeton. July, 1920.
214. Summary of investigations on effect of tile drains in the lime or prairie section of Alabama. By L. A. Jones. Nov., 1920.

TECHNICAL BULLETINS.

Bulletins 191, 195, 196, 201, and 204 are also designated Technical Bulletins 1, 2, 3, 4, and 5, respectively.

Canebrake Agricultural Experiment Station, Uniontown.

Established in 1885 as a branch of the station at Alabama Polytechnic Institute, q. v. for results prior to 1888; reorganized and established as a separate station in 1888.

BULLETINS.

1. [Experiments with potatoes, peas, lettuce, beets, beans, clover.] July, 1888.
2. Report of assistant director: Experiments with cantaloupes; notes on tomatoes; keeping qualities of Irish potatoes; fruit trees. [By W. H. Newman.] Oct., 1888.
3. Report of assistant director; Corn; forage crops; drainage. [By W. H. Newman.] Jan., 1889.
4. Experiments with cotton; meteorology. By W. H. Newman. Apr., 1889.
5. Oats; wheat; meteorological report. By W. H. Newman. July, 1889.
6. Vegetables; grapes; meteorology; soil temperatures. [By W. H. Newman.] Oct., 1889.
7. Cotton; corn; peas; melilotus. [By W. H. Newman.] Feb., 1890.
8. Cattle feeding; pig feeding. By W. F. Newman. Apr., 1890.
9. Crops for ensilage; forage plants and grasses. By W. H. Newman. 1890.
10. Corn; meteorology; soil temperatures. By W. H. Newman. Dec., 1890.
11. Cotton; fertilizers; varieties. By W. H. Newman. Feb., 1891.
12. Grapes, strawberries and raspberries. Oct., 1891.
13. Experiments with corn. By W. H. Newman. Dec., 1891.
14. Cotton experiments. By W. H. Newman. July, 1892.
15. Cattle feeding. By W. H. Newman. July, 1892.
16. Potatoes, amounts of seed. By B. M. Duggar. July, 1893.
17. Grapes and some new fruits. By B. M. Duggar. July, 1893.
18. Cotton, corn, wheat, forage crops, and fruit. By H. Benton.—Diseases of animals treated. By J. F. Connor. Mar., 1895.
19. Tests with oats and wheat at Uniontown in 1903, By J. F. Duggar and J. M. Richeson. Aug., 1903.

20. Alfalfa, sorghum, soy beans, and other forage plants. By J. F. Duggar and J. M. Richeson. Dec., 1903.
21. Experiments with cotton and corn in 1903. By J. F. Duggar and J. M. Richeson. Jan., 1904.
22. Experiments with cotton, corn, and oats in 1904. By J. F. Duggar and J. M. Richeson. Jan., 1905.
23. Experiments with cotton and corn in 1905. By J. F. Duggar and J. M. Richeson. Jan., 1906.
24. Experiments with cotton and corn in 1906. By J. F. Duggar and J. M. Richeson. Jan., 1907.
25. Experiments with cotton and oats in 1907. By F. D. Stevens. Jan., 1908.
26. Fertilizer tests with cotton; cover crops; alfalfa yields. By F. D. Stevens. Jan., 1909.
27. [Monthly rainfall as recorded at the station for a period of nine years.]—Agricultural value of nitrogenous materials for cotton on the Houston clays, as determined by field trials; residual effect of cover crops; alfalfa—yields, and effect as a means of restoring fertility. By F. D. Stevens. Jan., 1910.

ALASKA.

Alaska Agricultural Experiment Stations, Sitka, Kodiak, Rampart and Fairbanks.[1]

BULLETINS.

1. Suggestions to pioneer farmers in Alaska. By C. C. Georgeson. 1902.
2. Vegetable growing in Alaska. By C. C. Georgeson. 1905.
3. Haymaking at Kenai experiment station. By P. H. Ross. Apr. 15, 1907.

ARIZONA.

Agricultural Experiment Station of the University of Arizona, Tucson.

BULLETINS.

1. Arizona Agricultural Experiment Station. By F. A. Gulley. Dec., 1890.
2. I, Notes on some of the range grasses of Arizona; II, overstocking the range. By J. W. Toumey. Sept., 1891.
3. Irrigation in Arizona. By V. E. Stolbrand. Oct., 1891.
4. Waters and water analysis. By C. B. Collingwood. Nov., 1891.
5. Cañaigre (*Rumex hymenosepalus*). By F. A. Gulley. Apr., 1892.
6. Soils and waters. By C. B. Collingwood. Apr., 1892.
7. Cañaigre (*Rumex hymenosepalus*). By C. B. Collingwood, J. W. Toumey, and F. A. Gulley. Feb., 1893.
8. Cattle feeding. By F. A. Gulley and Matthew Moss. Mar., 1893.
9. Notes on insects and insecticides. By J. W. Toumey. Nov., 1893.
10. Experimental work at Willcox. By F. A. Gulley. Dec., 1893.
11. Agricultural development in southwestern Arizona; pumping water for irrigation. By F. A. Gulley and C. B. Collingwood. Dec., 1893.
12. Preliminary report of observations on the "crown knot." By J. W. Toumey. June, 1894.
13. The mesquite tree, its products and uses. By R. H. Forbes. Mar., 1894 [i. e. 1895].
14. Notes on scale insects in Arizona. By J. W. Toumey. June, 1895.
15. List of varieties of fruits. By W. S. Devol. June, 1895.
16. Notes on apricots at Phoenix Station. By W. S. Devol. June, 1895.
17. Agricultural convention, Part I, edited by W. S. Devol. Oct., 1895.
18. Agricultural convention, Part II, edited by W. S. Devol. Dec., 1895.
19. Sixth annual report, 1895.
20. Arizona weather. By E. M. Boggs. June, 1895.
21. Cañaigre. By R. H. Forbes. July, 1896.
22. Something about weeds. By J. W. Toumey. Jan., 1897.
23. Sugar beets. By W. S. Devol. Jan., 1897.
24. Seventh annual report, 1896. By W. S. Devol. Jan., 1897.
25. Eighth annual report, 1897. By W. S. Devol. June, 1897.
26. Sugar-beet experiments. By R. H. Forbes. Dec., 1897.
27. Arizona weather and climate. By E. M. Boggs and N. H. Barnes. Dec., 1897.
28. Salt River Valley soils. By R. H. Forbes. Mar., 1898.
29. The date palm. By J. W. Toumey. June, 1898.
30. Sugar-beet experiments during 1898. By A. J. McClatchie and R. H. Forbes. Jan., 1899.
31. Sugar beet experiments during 1899. By A. J. McClatchie. Dec., 1899.
32. Some insect pests of Salt River Valley and the remedies for them. By T. D. A. Cockerell. Dec., 1899.
33. An inquiry into the cause and nature of crown gall. By J. W. Toumey. Apr., 1900.
34. Timely hints for farmers [Nos. 1–18]. June, 1900.
35. Vegetable growing in southern Arizona. By A. J. McClatchie. Aug. 15, 1900.
36. Experimental work with sugar beets during 1900. By R. H. Forbes. Mar., 1901.
37. Winter irrigation of deciduous orchards. By A. J. McClatchie. Mar., 1901.
38. Timely hints for farmers [Nos. 19–34]. July, 1901.
39. Dairy herd records. By G. H. True. Aug., 1901.
40. Soil survey in Salt River Valley. By T. H. Means. May, 1902.
41. Irrigation at the station farm, 1898–1901. By A. J. McClatchie. May, 1902.
42. The cool side of a house in Arizona. By S. N. Woodward. June, 1902.
43. Utilizing our water supply. By A. J. McClatchie. July, 1902.
44. The river-irrigating waters of Arizona, their character and effects. By R. H. Forbes. Sept., 1902.
45. Timely hints for farmers [Nos. 35–41]. Nov., 1902.
46. The underground waters of Arizona, their character and uses. By W. W. Skinner. Oct., 1903.
47. Timely hints for farmers [Nos. 42–47]. Nov., 1903.
48. Relation of weather to crops. By A. J. McClatchie. June, 1904. See also 61.
49. Cost of pumping for irrigation. By S. M. Woodward. Nov., 1904.
50. Steer feeding experiments. By G. H. True and T. F. McConnell. May, 1905.
51. Timely hints for farmers [Nos. 48–54]. June, 1905.
52. Alfilaria (*Erodium cicutarium*) as a forage plant in Arizona. By J. J. Thornber. May, 1906.
53. Irrigating sediments and their effects upon crops. By R. H. Forbes. Sept., 1906.
54. Timely hints for farmers [Nos. 55–59]. Nov., 1906.

---

[1] Reports of agricultural investigations in Alaska, 1897–1900, were published as Office of Experiment Station Bulletins 48, 62, 82, 94. For other accounts of investigational work see the annual reports of the station.

55. Cement pipe for small irrigating systems and other purposes. By G. E. P. Smith. July, 1907.
56. Scale insects of the date palm. By T. D. A. Cockerell.—Extermination of date-palm scales. By R. H. Forbes. Sept., 1907.
57. Timely hints for farmers [Nos. 60–66]. Dec., 1908.
58. Citrus culture in the arid Southwest. By J. E. Coit. Dec., 1908.
59. Oleander poisoning of live stock. By F. W. Wilson. April, 1909.
60. Timely hints for farmers [Nos. 67–76]. June, 1909.
61. Relation of weather to crops and varieties adapted to Arizona conditions. By A. J. McClatchie and J. E. Coit. Oct., 1909. A revision of 48 pt. 3. See 78.
62. Olive culture and oil manufacture in the arid Southwest. By J. E. Coit. Dec., 24, 1909.
63. Irrigation and agricultural practice in Arizona. By R. H. Forbes. June 30, 1911.
64. Groundwater supply and irrigation in the Rillito Valley. By G. E. P. Smith. May 12, 1910.
65. The grazing ranges of Arizona. By J. J. Thornber. Sept. 21, 1910.
66. Chemistry and ripening of the date. By A. E. Vinson.—Ripening dates by incubation. By G. F. Freeman. May 1, 1911.
67. Native cacti as emergency forage plants. By J. J. Thornber.—Nutritive value of cholla fruit. By A. E. Vinson. Dec. 20, 1911.
68. Southwestern beans and teparies. By G. F. Freeman. Aug. 30, 1912. Revised reprint. Jan. 15, 1918.
69. Improved types of sheep for the Southwest. By F. W. Wilson.—The sheep of Tunis and Algeria. By A. E. Vinson. Nov. 30, 1912.
70. Dry-farming in the arid Southwest. By R. W. Clothier. Feb. 1, 1913.
71. Gasoline engine troubles and the care and operation of gasoline engines. By G. E. P. Smith. July 1, 1913.
71. [i. e. 72]. Agriculture of the Sulphur Spring Valley, Arizona. By R. H. Forbes. June 30, 1913.
73. Alfalfa in the Southwest. By G. F. Freeman. June 1, 1914.
74. Oil engines for pump irrigation and the cost of pumping. By G. E. P. Smith. Feb. 1, 1915.
75. Papago sweet corn, a new variety. By G. F. Freeman. May 1, 1915.
76. Walnut culture in Arizona. By J. J. Thornber. June 30, 1915.
77. Practical fig culture in Arizona. By W. H. Lawrence. June 1, 1916.
78. Relation of weather to crops and varieties adapted to Arizona conditions. By A. J. McClatchie, J. E. Coit, and the station staff. Oct. 20, 1916. A revision of 61.
79. Cold resistance in spineless cacti. By J. C. Th. Uphof.—Introduction. By J. J. Thornber. Dec. 1, 1916.
80. Certain effects under irrigation of copper compounds upon crops. By R. H. Forbes.—Appendix: Methods of analysis, with the collaboration of E. E. Free and W. H. Ross. Dec. 15, 1916.
81. How to combat rabbits, gophers, prairie dogs, coyotes, ants and grasshoppers. By A. L. Paschall. Nov., 15, 1917.
82. Johnson grass (*Sorghum halepense*) control. By H. C. Heard. Dec., 1917.
83. Poisonous animals of the desert. By C. T. Vorhies. Dec. 20, 1917.
84. Dry-farming in Arizona. By A. M. McOmie, C. R. Fillerup, and L. L. Bates. Edited and revised by H. C. Heard. Feb. 1, 1918.
85. A study of marketing conditions in the Salt River Valley, Arizona. By J. H. Collins. Mar. 1, 1918.
86. Machine-made cement pipe for irrigation systems and other purposes. By G. E. P. Smith. Oct. 30, 1918.
87. Insect pests of interest to Arizona cotton growers. By A. W. Morrill. Dec., 1918.
88. Use and waste of irrigation water. By G. E. P. Smith. May 15, 1919.
89. The Yuma mesa. By A. E. Vinson, F. J. Crider, and G. E. Thompson. Aug. 15, 1919.
90. Growing cotton in Arizona. By G. E. Thompson and C. J. Wood. Dec., 1919.
91. Fattening native steers for market, 1920. By R. H. Williams. Sept. 1, 1920.
92. The supply, the price, and the quality of fuel oils for pump irrigation. By G. E. P. Smith. Nov. 15, 1920.

ARKANSAS.

Arkansas Agricultural Experiment Station, Fayetteville.

BULLETINS.

1. [Announcement of lines of work of the Station. By A. E. Menke.]—Experiments on cotton and corn in Drew County. By F. M. Bordeaux [and A. E. Menke]. [1888?]
2. Diseases of animals. Apr., 1888.
3. [The peach tree borer and the codling moth, life, history, methods of attack and remedies.] By S. H. Crossman. Apr., 1888.
4. Commercial fertilizers. July, 1888.
5. Dehorning. By A. E. Menke, R. R. Dinwiddie, S. S. Twombly, and C. B. Collingwood. Aug., 1888.
6. Wheat; peas. Aug., 1888.
7. Horticulture: [Tests of varieties of grapes and strawberries.] Nov., 1888.
8. Spaying of cattle. Apr., 1889.
9. Cotton seed hulls for fattening. May, 1889.
10. Entomological notes. By C. W. Woodworth.—Chemical fertilizers. June, 1889.
11. Strawberries; wheat; oats. Sept., 1889.
12. Influence of spaying on milk production; milk analysis.—Entomology. By C. W. Woodworth. Apr., 1890.
13. Strawberries. By Jerome MacNeill. Aug., 1890.
14. The effects of the arsenites upon plants. By C. W. Woodworth. Sept., 1890.
15. Some new insecticides and their effect on cotton worms. [By G. C. Davis.] Dec., 1890.
16. Ringworm. Nature and treatment of a prevalent skin disease of young cattle. [By R. R. Dinwiddie.] July, 1891.
17. Horticulture: Grapes, strawberries, raspberries, plums, [Le Conte and Keifer pears]. [By J. F. McKay. Oct., 1891.
18. Some cotton experiments at Newport. By R. L. Bennett. Feb., 1892.
19. Manures and some principles in farm manuring. By G. L. Teller. May, 1892.
20. Animal parasitism; some Texas fever experiments. By R. R. Dinwiddie. Nov., 1892.
21. Horticulture: Grapes, some insects and fungous diseases and their remedies; spraying apparatus; apples and grapes in Arkansas. By J. T. Stinson. Dec., 1892.
22. Sorghum and sugar-cane culture; sirup and sugar making on small farms; some field experiments with cantaloupes and corn. By C. L. Newman. Dec., 1892.
23. Cotton. By R. L. Bennett and G. B. Irby. Mar., 1893.
24. Fodder; the fertilizing value of the cowpea. By G. L. Teller. July, 1893.

25. Animal pathology: Unsound corn and forage as a cause of disease in live stock; colics in horses and mules some further experiments with Texas cattle fever. By R. R. Dinwiddie. Dec., 1893.
26. Horticulture: [Apples]. By J. T. Stinson. Jan., 1894.
27. Agriculture, experiments at the Northeast Station: Late crops for overflow lands; corn varieties for all sections of the State; corn culture; rotation of crops; cotton; Egyptian varieties; cotton culture; stack frame for curing and storing cowpea hay; cowpea hay; forage plants; oats for hay. By R. L. Bennett and G. B. Irby. Mar., 1894.
28. Agriculture, experiments at the Southern Branch Station: Rye for green winter feeding; fertilizer experiments with rye; onions from seed; salsify, or oyster plant; fall raised Irish potatoes; preparation of soil for cotton; Bermuda grass; pocket gopher; moles. By C. L. Newman. June, 1894.
29. Agriculture; Wheat experiments on sandy loam soil at Newport Substation; some grass experiments on clay loam soil at Fayetteville. By R. L. Bennett and G. B. Irby. July, 1894.
30. Stock feeding. By G. L. Teller. Sept., 1894.
31. Agriculture, experiments at Northeast Substation: Fattening mature steers on cotton seed and cowpea hay; cowpeas; sweet potatoes; peanuts; cotton varieties; minor miscellaneous subjects. By R. L. Bennett and G. B. Irby. Dec., 1894.
32. Farm drainage. By C. L. Newman. Dec., 1894.
33. Insects: Insects injurious to fruits and vegetables and remedies for destroying them. By J. T. Stinson. Jan., 1895.
34. Vegetable gardening: Experiments at the Southern Branch Station. By C. L. Newman. Jan., 1895.
35. Animal pathology: Verminous bronchitis; parturient apoplexy of cows; hog cholera and other swine diseases; tuberculosis of cattle; glanders in horses and mules. By R. R. Dinwiddie. Apr., 1895.
36. Grasses and clovers. By R. L. Bennett. May, 1895.
37. Sirups and molasses. By G. L. Teller and J. F. Moore. Nov., 1895.
38. Irish potatoes. By C. L. Newman. Jan., 1896.
39. Spraying fruits: Strawberries, grapes. By J. T. Stinson. Jan., 1896.
40. On the toxic properties of molds. By R. R. Dinwiddie.—Field investigations of various stock diseases. By H. V. Goode. May, 1896.
41. Pork production on crops gathered by hogs; a succession of crops for hogs. By R. L. Bennett. Aug., 1896.
42. Concerning wheat and its mill products. By G. L. Teller. Oct., 1896. Issued in two forms, one containing only Pt. I, p. 59–74, the other having two parts including p. 59–104.
43. Report of the horticulturist, 1896. By J. T. Stinson. Dec., 1896.
44. Vegetable gardening. By C. L. Newman. Jan., 1897.
45. Milk, its decomposition and preservation. By R. R. Dinwiddie. May, 1897
46. Experiments with manures and rotation for improving worn cotton soils; experiments on beef and pork production in connection therewith. By R. L. Bennett. July, 1897.
47. Concerning fertilizers and manures; after-effect of manures. By G. L. Teller. Oct., 1897.
48. Strawberries. By J. T. Stinson. Nov., 1897.
49. Preliminary report on Arkansas seedling apples. By J. T. Stinson. Jan., 1898.
50. Some Irish potato experiments. By C. L. Newman. Jan., 1898.
51. Methods of combating communicable diseases of farm animals. By R. R. Dinwiddie. May, 1898.
52. Feeding value to steers of cotton seed, ground cottonseed, cotton meal, and hulls; effect of temperature. By R. L. Bennett. July, 1898.
53. A report of progress of investigations in the chemistry of wheat. By G. L. Teller. Sept., 1898.
54. Some experiments on the fattening value of certain foods gathered by pigs. By R. L. Bennett. Dec., 1898.
55. Supplementary circular: Pork and beef as money crops for cotton farmers, also as crops for improving soils for succeeding crops of cotton. By R. L. Bennett. [n. d.].
56. Orchard cultivation. By J. T. Stinson. Dec., 1898.
56. Tomatoes, cabbage, and onions. By C. L. Newman. Mar., 1899.
57. The relative virulence for the domestic animals of human and bovine tubercle: I, Bibliographical review; II, Experimental researches. By R. R. Dinwiddie. June, 1899. See also 63.
58. An experiment in grazing a corn and cowpea field with steers; experiments with peanuts, legume manuring, cotton meal, whole and crushed cottonseed manuring, and varieties of cotton. By R. L. Bennett. Aug., 1899.
59. The comparative yield of corn from seed of the same variety grown in different latitudes. By C. L. Newman. Dec., 1899.
60. Second report on Arkansas seedling apples. By J. T. Stinson. Dec., 1899.
61. Annual plants for summer hay and pasture, for winter hay and pasture, and for forage or coarse fodder; permanent plants for meadow and pasture; special crops for pig grazing. By R. L. Bennett. July, 1900.
62. Wheat experiments. By C. L. Newman. Nov., 1900.
63. The relative susceptibility of the domestic animals to the contagia of human and bovine tuberculosis. By R. R. Dinwiddie. Dec., 1900. A sequel to 57. Also popular edition.
64. Notes on celery. By Ernest Walker. Dec., 1900.
65. Pig feeding experiments. By R. L. Bennett. Dec., 1900.
66. Oat experiments. By C. L. Newman. 1901.
67. Investigations of swine diseases in Arkansas. By R. R. Dinwiddie. 1901.
68. Soil improvement and forage experiments. By R. L. Bennett. 1901.
69. Some muskmelon experiments. By Ernest Walker. 1901.
70. Cowpea experiments. By C. L. Newman. 1901.
71. Why apple trees fail. By Ernest Walker. 1902.
72. Sweet potato experiments. By C. L. Newman. 1902.
73. Pork production experiments and hog ranching. By R. L. Bennett. 1902.
74. The phosphate rocks of Arkansas. By J. C. Branner and J. F. Newsom. 1902.
75. Alfalfa. By R. L. Bennett. 1902.
76. Pig feeding experiments with cottonseed meal. By R. R. Dinwiddie. 1903.
77. Cowpea experiments By C L. Newman. 1903.
78. Experiments with edible oils. By J. F. Moore. 1903.
79. Peach growing in Arkansas. By Ernest Walker. 1903. Second edition. 1909
80. Cowpea hay. By C. L. Newman. 1903.
81. Fertilizers. By A. M. Muckenfuss. 1904.
82. Livestock sanitation in Arkansas. By R. R. Dinwiddie. 1904.
83. Broom corn suggestions. By C. L. Newman. 1904.
84. Peanuts. By C. L. Newman. 1904.
85. Cotton food-products in hog feeding. By R. R. Dinwiddie. 1904.
86. Asparagus and salt; asparagus growing in Arkansas; rhubarb in Arkansas. By Ernest Walker.—Fertilizers registered for sale in Arkansas during 1905. By A. M. Muckenfuss. 1905.

87. Glanders of horses. By R. R. Dinwiddie. 1905.
88. Food adulteration in Arkansas. By J. H. Norton. 1905.
89. Rice growing in Arkansas. By W. G. Vincenheller. 1906.
90. The cattle tick in Washington and Benton Counties. By W. G. Vincenheller. 1906.
91. Suggestions upon the care of apple orchards. By Ernest Walker. 1906.
92. Some insects of orchard and other fruits. By C. F. Adams. 1907.
93. Cattle tick eradication in northwest Arkansas. By W. G. Vincenheller. 1907.
94. Rice culture. By R. J. Nelson. 1907.
95. Notes on spraying and suggestions for combatting crop pests. By Ernest Walker. 1907.
96. Anthrax in Arkansas. By R. R. Dinwiddie. 1907.
97. Anthrax and anthrax vaccines. (Technical.) By R. R. Dinwiddie. 1907.
98. Rice. By R. J. Nelson. 1908.
99. Farm poultry. By W. S. Jacobs. 1908.
100. Meteorological summary, 1891–1907. By J. H. Norton. 1908.
101. Notes on the cattle tick and tick fever of cattle. By R. R. Dinwiddie.—Tick eradication in Arkansas in 1907. By W. Lenton. 1908.
102. The San José scale in Arkansas, a bulletin of information. By C. F. Adams. 1908.
103. The deposition of fat and lean in hogs. By R. R. Dinwiddie and A. K. Short. 1909.
104. Farm drainage. By C. P. Norgord. 1909.
105. Studies on the bacteriology of infectious swine diseases. (Technical.) By R. R. Dinwiddie and J. F. Stanford. 1910.
106. Livestock sanitary laws of the State of Arkansas. By W. Lenton. 1910.
107. The San José scale and how to control it. By Paul Hayhurst. 1911.
108. Cottonseed poisoning of live stock. By R. R. Dinwiddie and A. K. Short. 1911.
109. Diseases of apple trees and fruit caused by fungi and insects. By J. L. Hewitt and Paul Hayhurst. 1911.
110. Rice blight. By J. L. Hewitt. 1912.
111. The infectiousness of serum and serum-free blood corpuscles in hog cholera. (Technical.) By R. R. Dinwiddie. 1912.
112. An unknown apple tree disease. By J. L. Hewitt and H. E. Truax. 1912.
113. Twig blight and blossom blight of the apple. By J. L. Hewitt. 1913.
114. Spraying investigations for 1912. By J. L. Hewitt. 1913.
115. Corn improvement. By C. V. Ruzek.—Varieties of corn adapted to Arkansas. By Martin Nelson and C. V. Ruzek. Sept., 1913.
116. Varieties of fruit for Arkansas. By H. E. Truax. Jan., 1914.
117. Significance of bacterial infection in hog cholera. (Technical.) By R. R. Dinwiddie. May, 1914.
118. Oats. By Martin Nelson and C. V. Ruzek. May, 1914.
119. Tick eradication in Arkansas. By R. M. Gow. July, 1914.
120. Studies on the hematology of normal and cholera-infected hogs. (Technical.) By R. R. Dinwiddie. Oct., 1914.
121. Report of cultural and variety tests with wheat. By Martin Nelson and L. W. Osborn. Jan., 1915.
122. Strawberry growing in Arkansas. By W. H. Wicks. Feb., 1915.
123. The relation of fruit growing to soil fertility. (Technical.) By R. C. Thompson. May, 1916.
124. Sweet potato culture in Arkansas. By W. H. Wicks. Dec., 1915.
125. Biochemical changes in cottonseed in storage. (Technical.) By J. B. Rather. Mar., 1916.
126. Livestock sanitary laws of the State of Arkansas; State laws and regulations of the board of control; notes on these laws and regulations. By R. M. Gow. 1916.
127. Farm sanitation. By C. L. McArthur. March, 1916.
128. Fattening swine on rice by-products. By H. E. Dvorachek. June, 1916.
129. Varieties of cotton, 1916. By W. E. Ayres. June. 1927.
130. Corn variety tests 1915 and 1916. By L. W. Osborn. Mar., 1917.
131. The inosite-phosphoric acids of cottonseed meal. (Technical.) By J. B. Rather. March, 1917.
130. [i. e. 132]. Tick eradication laws and regulations of the State of Arkansas; State laws and regulations of the board of control; notes on these laws and regulations. By R. M. Gow. 1917.
133. The digestibility of some Arkansas feeds for hogs. By J. B. Rather. Apr., 1917.
134. Blooming period of the apple in northwest Arkansas. By W. H. Wicks. May, 1917.
135. The determination of phytin phosphorus in plant products. (Technical.) By J. B. Rather. Aug., 1917.
136. Tuberculosis in farm animals. By C. L. McArthur. Aug., 1917.
137. Variety study of the Irish potato. By W. H. Wicks. Nov., 1917.
138. The nature of the inosite phosphoric acids of some feeding materials. (Technical.) By J. B. Rather. Dec., 1917.
139. The attenuation of hog cholera virus and its effect upon normal hogs. (Technical.) By C. L. McArthur. Nov., 1917.
140. An accurate loss-on-ignition method for determination of organic matter in soils. (Technical.) By J. B. Rather. Dec., 1917.
141. The dormant spray for the San José scale. By G. G. Becker. Jan., 1918.
142. Soft pork from rice bran. By H. E. Dvorachek and H. A. Sandhouse. Mar., 1918.
143. The effect of cross-pollination on size, color, shape, and quality of the apple. (Technical.) By W. H. Wicks. Mar., 1918.
144. Storage rots of sweet potatoes. By J. A. Elliott. May, 1918.
145. Varieties of cotton, 1917. By W. E. Ayres. May, 1918.
146. The round-headed apple-tree borer (*Saperda candida* Fab.). (Technical.) By G. G. Becker. July, 1918.
147. The utilization of phytin phosphorus by the pig. (Technical.) By J. B. Rather. May, 1918.
148. Not published.
149. Arkansas peach diseases. By J. A. Elliott. June, 1918.
150. The peach-tree borer (*Sanninoidea exitiosa* Say). (Technical.) By G. G. Becker. June, 1918. Includes data previously published in Jour. Econ. Ent., 10 (1917), No. 1, p. 49–59.
151. Immunity of suckling pigs to hog cholera. (Technical.) By C. L. McArthur. July, 1918.
152. Preserving eggs for winter use. By H. E. Dvorachek and S. R. Stout. July, 1918.
153. Cotton spacing experiments. By W. E. Ayres. July, 1918.
154. The apple woolly aphis (*Eriosoma lanigera* Haus.). (Technical.) By G. G. Becker. July, 1918.
155. Results of fertilizer experiments in Arkansas. By De F. Hungerford. Oct., 1918.
156. The identification of acids of agricultural products. (Technical.) By J. B. Rather and E. E. Reid. Aug., 1918.
157. Varieties of cotton, 1909–1917. By W. E. Ayres. Dec., 1918.
158. Nature and progress of the work of the agricultural experiment station. By Martin Nelson. Dec., 1918. Contains summaries of 129–157.
159. Varieties of cotton, 1918. By W. E. Ayres. Mar. 1919.

160. Tick eradication laws. By R. C. Knox.—Regulations of the board of control, with notes on these laws and regulations. By R. M. Gow. 1919.
161. Cultural experiments with cotton, 1918. By W. E. Ayres. Mar. 1919.
162. A bacterial root rot of field corn. (Technical.) By H. R. Rosen. Aug., 1919.
163. The influence of age of hens on egg production. By H. E. Dvorachek and S. R. Stout. May, 1919.
164. Silos and silage in Arkansas. By H. E. Dvorachek. June, 1919.
165. Report of oats experiments, 1908–1919. By Martin Nelson and L. W. Osborn. Feb., 1920.
166. Varieties of cotton, 1919. By Martin Nelson and E. A. Hodson. Feb., 1920.
167. The mosaic disease of sweet potatoes. By H. R. Rosen. April, 1920.
168. Lint frequency in cotton with a method for determination. By E. A. Hodson. Feb., 1920.
169. Correlations of certain characters in cotton. By E. A. Hodson. June, 1920.
170. Beekeeping in Arkansas. By W. J. Baerg. June, 1920.
171. Results of seven years' pedigree selection in Trice cotton. By E. A. Hodson. June, 1920.
172. Making Bordeaux mixture, and some other spraying problems. By W. S. Fields and J. A. Elliott. July, 1920.

CALIFORNIA.

Agricultural Experiment Station of the University of California, Berkeley.

BULLETINS.

1. Examination of the water of the San Fernando tunnel, Los Angeles County. By E. W. Hilgard. [Jan., 1884.]
2. [Plant distribution.] By E. W. Hilgard. Jan. 15, 1884.
3. [Remedies for phylloxera]; failure of cuttings. By E. W. Hilgard. Jan. 17, 1884.
4. [Analysis of tanning materials.] By E. W. Hilgard. Jan., 1884.
5. Notice regarding distribution of plants. By E. W. Hilgard. Feb., 1884.
6. Comparative examination of claret grapes from Fresno and Livermore Valley. By E. W. Hilgard. Feb., 1884.
7. Examination of irrigation waters. By E. W. Hilgard. Feb., 1884.
8. Examinations of fertilizing materials; examinations of soils. By E. W. Hilgard. Mar., 1884.
9. Examination of Zinfandel wines. By E. W. Hilgard. Apr., 1884.
10. Examination of soils. By E. W. Hilgard. Apr., 1884.
11. Concerning the census report "On the physical and agricultural features of California." By E. W. Hilgard. May, 1884.
12. Examination of Zinfandel wines. By E. W. Hilgard. May, 1884.
13. Examinations of red or claret wines. By E. W. Hilgard. May, 1884.
14. Examinations of artesian waters from the San Joaquin Valley. By E. W. Hilgard. Aug., 1884.
15. Examinations of soils from southern California. By E. W. Hilgard. Aug., 1884.
16. Entomology in the college of agriculture. By C. H. Dwinelle. Sept., 1884.
17. The muscat grape on the southern mesas. By E. W. Hilgard. [Sept., 1884.]
18. Mr. J. A. Bauer's phylloxera remedy. By E. W. Hilgard. Oct., 1884.
19. Observations on the phylloxera made during 1884. By F. W. Morse. Oct., 1884.
20. Examination of stream and well waters. By E. W. Hilgard. Oct., 1884.
21. Examination of red wines from Sonoma and Napa Counties. [1884].
22. University seed distribution. By C. H. Dwinelle. Nov., 1884.
23. Vintage work in the viticultural laboratory, 1884. By E. W. Hilgard. Nov., 1884.
24. Examinations of grape-growing soils. By E. W. Hilgard. [Nov., 1884].
25. Examinations of Alameda County vineyard soils. By E. W. Hilgard. [1884?].
26. Examinations of miscellaneous vegetable substances. By E. W. Hilgard. Dec., 1884.
27. Examination of soils from the Northern Coast Range Region. By E. W. Hilgard. Dec., 1884.
28. Examinations of tule, marsh, and alkali soils. By E. W. Hilgard. [1884?].
29. Distribution of plants and scions. By E. W. Hilgard. Dec., 1884.

29 [i. e. 30]. Concerning specimens sent for examination; examinations of various upland soils. [1884?].

31. Examination of Trosseau and Burger wines. By E. W. Hilgard. Jan., 1885.
32. Examinations of well and spring waters. By E. W. Hilgard. Feb., 1885.
33. Examinations of soils and waters. By E. W. Hilgard. Feb., 1885.
34. Experiments on the growth of cuttings from wild American vines. By E. W. Hilgard. Mar., 1885.
35. Investigations of wines from rare grape varieties. By E. W. Hilgard. Apr., 1885.
36. Examinations of soils and subsoils. By E. W. Hilgard. Apr., 1885.
37. Investigations of wines from rare grape varieties. By E. W. Hulgard. Apr., 1885.
38. Investigations of wines from rare grape varieties. By E. W. Hilgard. Apr., 1885.
39. Analyses of oranges and lemons from the Riverside citrus fair, Mar., 1845, [i. e. 1885]. By E. W. Hilgard. May, 1885.
40. [Investigations of wines from rare grape varieties.] By E. W. Hilgard. May, 1885.
41. The olive. By W. G. Klee. June, 1885.
42. Vintage work in the viticultural laboratory, 1885. By E. W. Hilgard. Aug., 1885.
43. Analyses of Santa Clara Valley red wines. By E. W. Hilgard. Sept., 1885.
44. The "bed-rock lands" of Sacramento County. By E. W. Hilgard. Oct., 1885.
45. Grafting the California wild vine. By E. W. Hilgard and J. E. Packard. Oct., 1885.
46. Grafting and fruiting of resistant vines. By E. W. Hilgard and G. Husmann. Oct., 1885.
47. Seed distribution. By E. W. Hilgard. [1885?].
48. Investigations upon the mercurial phylloxera remedy. By E. W. Hilgard. Nov., 1885.
49. Examinations of soils from the bay region. By E. W. Hilgard. Dec., 1885.
50. Distribution of plants and scions. By E. W. Hilgard. Dec., 1885.
51. The wines of 1885. By E. W. Hilgard. Jan., 1886.
52. Alkaline washes for fruit trees. By E. W. Hilgard. Feb., 1886.
53. Irrigation, drainage and alkali. By E. W. Hilgard. Feb., 1886.
54. Condensed grape must and its uses. By E. W. Hilgard. Apr., 1886.
55. The woolly aphis and its repression. By W. G. Klee. May, 1886.
56. Whale-oil soap insecticide washes; the sulphuring of vines. By E. W. Hilgard. May, 1886.
57. Vintage work and instruction in the viticultural laboratory, 1886. By E. W. Hilgard. Aug., 1886.
58. The Hessian fly and resistant grains. By E. J. Wickson. Oct. 1886.
59. [The experimental vineyard at Cupertino.] By E. W. Hilgard. Nov., 1886.
60. Colorimetric measurement of wines. By E. W. Hilgard. Dec., 1886.
61. Distribution of seeds and plants. By E. W. Hilgard. Dec., 1886.
62. Distribution of cuttings and scions. By E. W. Hilgard. Dec., 1886.
63. Experiments on methods of fermentation. By E. W. Hilgard. Jan., 1887
64. Planting and grafting resistant vines. By E. W. Hilgard. Jan., 1887.
65. Shall California make sophisticated wines? By E. W. Hilgard. Feb., 1887.

66. The principles and practice of pasteurizing. By E. W. Hilgard. Feb., 1887.
67. Misconception of the university viticultural work. By E. W. Hilgard. Mar., 1887.
68. University distribution of seeds, plants, etc. By E. J. Wickson.—Influence of the mode of fermentation on the color of wines. By E. W. Hilgard. Apr., 1887.
69. Wine colors and color wines. By E. W. Hilgard. May, 1887.
70. Abnormal deposits on wine leaves; mysterious death of vines; remedy for the anthracnose of vines. By E. W. Hilgard. June, 1887.
71. The use of gases against scale insects. By F. W. Morse. June, 1887.
72. Sugar beets at Fresno. By E. W. Hilgard.—The Hessian fly and resistant grains. By E. J. Wickson. Aug., 1887.
73. The use of hydrocyanic acid against scale insects. By F. W. Morse. Aug., 1887.
74. Vintage work and instruction in the viticultural laboratory, 1887; the choice of resistant stocks. By E. W. Hilgard. Aug., 1887.
75. Spray and band treatments for the codling moth. By E. J. Wickson.—Difficult fermentations. By E. W. Hilgard. Nov., 1887.
76. Distribution of seeds and plants. By E. W. Hilgard. Dec., 1887.
77. The extraction of color and tannin during red-wine fermentation. By E. W. Hilgard. Dec., 1887.
78. Report on the establishment of outlying stations. By E. W. Hilgard. Mar., 1888.
79. Experiments on the cause and avoidance of injury to foliage in the hydrocyanic gas treatment of trees. By F. W. Morse. May, 1888.
80. Progress of the experiment station work. By E. W. Hilgard. Aug., 1888.
81. Distribution of seeds and plants. By E. J. Wickson. Dec., 1888.
82. The lakes of San Joaquin Valley. By E. W. Hilgard. June, 1889.
83. The rise of the alkali in the San Joaquin Valley. By E. W. Hilgard. Nov., 1889.
84. Distribution of seeds and plants. By E. J. Wickson. Dec., 1889.
85. Observations on olive varieties. By W. G. Klee. Feb., 1890.
86. Preservation fluids for fresh fruits; the sulphuring of dried fruits. By E. W. Hilgard. May, 1890.
87. The conservation of wines. By E. W. Hilgard. June, 1890.
88. The use of fertilizers in California. Oct., [1890].
89. Distribution of seeds and plants. By E. J. Wickson. Dec., 1890.
90. Fiber plants for California. By E. W. Hilgard.—Flax for seed and fiber. By E. J. Wickson. Jan., 1891.
91. Port and sherry grapes in California; importation of Italian grapes; importation of olives. By E. W. Hilgard. Feb., 1891.
92. Notes on California olives, their adaptations and oils. By L. Parparelli. Mar., 1891.
93. Investigation of California oranges and lemons. By G. E. Colby and H. L. Dyer. June, 1891.
94. Composition of the ramie plant. By M. E. Jaffa.—The fertilizing value of greasewood. By E. W. Hilgard. Sept., 1891.
95. Distribution of seeds and plants. By E. J. Wickson. Dec. 1891.
96. Sulphuring in fruit drying. By E. W. Hilgard.—Fig trees at the experiment stations; notes on Persian palms. By C. H. Shinn. Jan., 1892.
97. Investigation of California prunes, apricots, and peaches. By G. E. Colby. [1892?].
98. Distribution of seeds and plants. By E. J. Wickson. Dec., 1892.
99. Root knots on fruit trees and vines: a new nozzle tester. By C. W. Woodworth. Dec., 1892.
100. Investigation of cattle foods of California. By M. E. Jaffa. Feb., 1893.
101. Further examination of California prunes, apricots, plums, and nectarines. By G. E. Colby. May, 1893.
102. Analysis of figs and fig soils. By M. E. Jaffa and G. E. Colby. June, 1893.
103. Distribution of seeds and plants. By E. J. Wickson. Dec., 1893.
104. Investigations of California olives and olive oils. By A. P. Hayne. Apr., 1894.
105. The canaigre, or tanners' dock. By E. W. Hilgard.—Australian saltbush for alkali soils. By M. E. Jaffa. Oct., 1894.
106. Distributions of seeds, plants, and scions. By E. J. Wickson. Dec., 1894.
107. The Russian thistle in California. By C. H. Shinn. May, 1895.
108. The distribution of the salts in alkali soils. By E. W. Hilgard and R. H. Loughridge. Aug., 1895.
109. Distribution of seeds and plants. By E. J. Wickson. Nov., 1895.
110. The study of human foods and practical dietetics. By M. E. Jaffa. Feb., 1896.
111. The work of the College of Agriculture and experiment stations. By E. W. Hilgard. Sept., 1896.
112. Distribution of seeds and plants. By E. J. Wickson. Nov., 1896.
113. California walnuts, almonds, and chestnuts: Their composition and draft upon the soil. By G. E. Colby.—The bleaching of nuts by dipping. By E. W. Hilgard. Nov., 1896.
114. The causes of "frogging" and "bloating" of prunes. By F. T. Bioletti. Dec., 1896.
115. Remedies for insects and fungi. By C. W. Woodworth. Dec., 1896. Revised. Feb., 1898.
116. The California vine hopper. By C. W. Woodworth. May, 1897.
117. The control of the temperature in wine fermentation. By A. P. Hayne. July, 1897.
118. Distribution of seeds and plants. By E. J. Wickson. Dec., 1897.
119. Vine pruning. By F. T. Bioletti. Dec., 1897.
120. The olive knot. By F. T. Bioletti. Mar., 1898.
121. The conservation of soil moisture and economy in the use of irrigation water. By E. W. Hilgard and R. H. Loughridge. Aug., 1898.
122. Orchard fumigation. By C. W. Woodworth. Jan., 1899.
123. Olives: Cultivation, oil making, pickling, diseases. By F. T. Bioletti.—Varieties and their adaptation. By G. E. Colby. Jan., 1899. See 137.
124. Lupins for green-manuring. By J. B. Davy. May, 1899.
125. Australian saltbushes, results of eighteen years' tests: Characteristics, propagation, and field experiments. By C. H. Shinn.—Composition and food value. By M. E. Jaffa. May, 1899.
126. Paris green for the codling moth. By C. W. Woodworth.—Examination of Paris green and some other arsenical spraying materials. By G. E. Colby. 1899.
127. Bench-grafting resistant vines. By F. T. Bioletti and A. M. Dal Piaz. 1900.
128. Nature, value, and utilization of alkali lands. By E. W. Hilgard. Mar., 1900. See 133.
129. Report on the condition of olive culture in California. By A. P. Hayne and E. W. Hilgard. May, 1900.
130. Preservation of unfermented grape must. By F. T. Bioletti and A. M. Dal Paiz. Aug., 1900.
131. The phylloxera of the vine. By F. T. Bioletti. May, 1901.
132. Feeding of farm animals. By M. E. Jaffa and Le Roy Anderson. June, 1901.
133. Tolerance of alkali by various cultures. By R. H. Loughridge. Aug., 1901. Revised in conjunction with 128.
134. Report on condition of vineyards in portions of Santa Clara Valley. By F. T. Bioletti and E. H. Twight. Sept., 1901.
135. The potato worm in California (*Gelechia operculella* Zeller.). By W. T. C. Clarke. Oct., 1901.

136. Erinose of the vine. By F. T. Bioletti and E. H. Twight. Nov., 1901.
137. Pickling ripe and green olives. By F. T. Bioletti. Dec., 1901. Revised in conjunction with 123.
138. Citrus fruit culture. By J. W. Mills. Jan., 1902.
139. Orange and lemon rot. By C. W. Woodworth. Feb., 1902.
140. Lands of the Colorado delta in the Salton basin. By F. J. Snow, E. W. Hilgard, and G. W. Shaw. Feb., 1902.—Supplement. The native vegetation and crops of the Colorado delta in the Salton basin. By J. Burtt-Davy. Apr., 1902.
141. Experiments with deciduous fruits at and near the Southern Coast Range Substation, Paso Robles, from 1889 to 1902. By C. H. Shinn. June, 1902.
142. Grasshoppers in California. By C. W. Woodworth. Aug., 1902.
143. The California peach-tree borer. By C. W. Woodworth. Sept., 1902.
144. The peach worm. By W. T. Clarke. Sept., 1902.
145. The red spider of the citrus trees. By C. W. Woodworth. Nov., 1902.
146. New methods of grafting and budding vines. By E. H. Twight. Nov., 1902.
147. Culture work at the substations, 1899–1901. By C. H. Shinn. June, 1902.
148. Resistant vines and their hybrids. By E. H. Twight. Oct., 1902.
149. The California sugar industry: I, Historical and general. By G. W. Shaw. May, 1903.
150. The value of oak leaves for forage. By W. W. Mackie. Apr., 1903.
151. Arsenical insecticides. By G. E. Colby. May, 1903.
152. Fumigation dosage. By C. W. Woodworth. June, 1903.
153. Spraying with distillates. By W. H. Volck. June, 1903.
154. Sulphur sprays for red spiders. By W. H. Volck. June, 1903.
155. Directions for spraying for the codling moth. By C. W. Woodworth. Mar., 1904.
156. Fowl cholera. By A. R. Ward. Apr., 1904.
157. Commercial fertilizers. By G. Roberts. Apr., 1904.
158. California olive oil: Its manufacture. By G. W. Shaw. June, 1904.
159. Contribution to the study of fermentation. I. By E. H. Twight and C. S. Ash. June, 1904.
160. The hop aphis. By W. T. Clarke. June, 1904.
161. Tuberculosis in fowls. By A. R. Ward. June, 1904.
162. Commercial fertilizers. By George Roberts. Dec., 1904.
163. Pear scab. By R. E. Smith. Dec., 1904.
164. Poultry feeding and proprietary foods. By M. E. Jaffa. Jan., 1905.
165. Asparagus and asparagus rust in California. By R. E. Smith. Jan., 1905.
166. Spraying for scale insects. By H. J. Quayle. Apr., 1905.
167. Manufacture of dry wines in hot countries. By F. T. Bioletti. Apr., 1905.
168. Observations on some vine diseases in Sonoma County, California. By O. Butler. May, 1905.
169. Field observations upon the tolerance of the sugar beet for alkali. By G. W. Shaw. May, 1905.
170. Studies in grasshopper control. By J. S. Hunter. June, 1905.
171. Commercial fertilizers. By George Roberts. June, 1905.
172. Further experience in asparagus rust control. By R. E. Smith. Jan., 1906.
173. Commercial fertilizers. By George Roberts. Dec., 1905.
174. A new wine-cooling machine. By F. T. Bioletti. Jan., 1906.
175. Tomato diseases in California. By R. E. Smith. Jan., 1906.
176. Sugar beets in the San Joaquin Valley. By G. W. Shaw. Jan., 1906.
177. A new method of making dry red wine. By F. T. Bioletti. Feb., 1906.
178. Mosquito control. By H. J. Quayle. July, 1906.
179. Commercial fertilizers. By George Roberts. June, 1906.
180. Resistant vineyards, grafting, planting, cultivation. By F. T. Bioletti. 1906.
181. The selection of seed wheat. By G. W. Shaw. Oct., 1906.
182. Analyses of Paris green and lead arsenate. By G. E. Colby.—Proposed insecticide law. By C. W. Woodworth. Dec., 1906.
183. The California tussock moth. By W. H. Volck. Dec., 1906.
184. Report of the plant pathologist to July 1, 1906. By R. E. Smith. Jan., 1907.
185. Report of progress in cereal investigations. By G. W. Shaw. Jan., 1907.
186. Oïdium or powdery mildew of the vine. By F. T. Bioletti. Feb., 1907.
187. Commercial fertilizers. By J. S. Burd. Jan., 1907.
188. Lining of ditches and reservoirs to prevent seepage losses. By Elwood Mead and B. A. Etcheverry. June, 1907.
189. Commercial fertilizers. By J. S. Burd. June, 1907.
190. The brown rot of the lemon. By R. E. Smith. July, 1907.
191. California peach blight. By R. E. Smith. Sept., 1907.
192. Insects injurious to the vine in California. By H. J. Quayle. Oct., 1907.
193. The best wine grapes for California; pruning young vines; pruning the sultanina. By F. T. Bioletti. Nov., 1907.
194. Commercial fertilizers. By J. S. Burd. Dec., 1907.
195. The California grape root-worm. By H. J. Quayle. July, 1908.
196. Eucalyptus in California. By N. D. Ingham. July, 1908. See also 225.
197. Grape culture in California: Improved methods of wine making. By F. T. Bioletti. Yeasts from California grapes. By H. C. Holm. July, 1908.
198. The grape leaf-hopper. By H. J. Quayle. July, 1908.
199. Bovine tuberculosis. By A. R. Ward and C. M. Haring. Aug., 1908.
200 Gum disease of citrus trees in California. By R. E. Smith and O. Butler. Aug., 1908.
201. Commercial fertilizers. By J. S. Burd. June, 1908.
202. Commercial fertilizers. By J. S. Burd. Dec., 1908. [Pub. 1909.]
203. Report of the plant pathologist and superintendent of southern California stations, July, 1906, to June 30, 1909. By R. E. Smith. Nov., 1909.
204. The dairy cow's record and stable. By Leroy Anderson [and C. W. Rubel]. Dec., 1909.
205. Commercial fertilizers. By J. S. Burd. Dec., 1909.
206. Commercial fertilizers. By J. S. Burd. June, 1910.
207. The control of the Argentine ant. By C. W. Woodworth. Oct., 1910.
208. The late blight of celery. By S. S. Rogers. Jan., 1911.
209. The cream supply. By H. A. Hopper. Jan., 1911.
210. Imperial Valley settler's crop manual. By J. E. Coit and W. E. Packard. Jan., 1911.
211. How to increase the yield of wheat in California. By G. W. Shaw. Feb., 1911.
212. California white wheats. By G. W. Shaw and A. J. Gaumnitz. Apr., 1911.
213. The principles of wine making. By F. T. Bioletti. May, 1911.
214. Citrus fruit insects. By H. J. Quayle. May, 1911.
215. The house fly in its relation to public health. By W. B. Herms. May, 1911.
216. A progress report upon soil and climatic factors influencing the composition of wheat. By G. W. Shaw and E. H. Walters. June, 1911.

217. Honey plants of California. By M. C. Richter. June, 1911.
218. California plant diseases. By R. E. Smith and E. H. Smith. June, 1911.
219. Report of live stock conditions in Imperial County, Calif. By C. L. Roadhouse and F. M. Hayes. June, 1911.
220. Dosage tables. By C. W. Woodworth. July, 1911.
221. Commercial fertilizers. By J. S. Burd. Oct., 1911.
222. The red or orange scale. By H. J. Quayle. July, 1911.
223. The black scale. By H. J. Quayle and E. W. Rust. July, 1911.
224. The production of the lima bean: The need and possibility of its improvement. By G. W. Shaw and M. E. Sherwin. Nov., 1911.
225. Tolerance of eucalyptus for alkali. By R. H. Loughridge. Oct., 1911. A partial reprint of 196.
226. The purple scale. By H. J. Quayle, 1912.
227. Grape vinegar. By F. T. Bioletti. 1912. See also 287.
228. New control methods for the pear thrips and peach tree borer. By E. L. Morris. 1912.
229. Hog cholera and preventive serum. By F. M. Hayes. Aug., 1912.
230. Enological investigations. By F. T. Bioletti and W. V. Cruess. Aug., 1912.
231. Walnut culture in California: Walnut blight. By R. E. Smith, C. O. Smith, and H. J. Ramsey. Aug., 1912.
232. Commercial fertilizers. By J. S. Burd. Sept., 1912.
233. Three years' work of the Ferndale (Humboldt County) cow-testing association. By Le Roy Anderson. Sept., 1912.
234. Red spiders and mites of citrus trees. By H. J. Quayle. Nov., 1912.
235. Further proof of the cause and infectiousness of crown gall. By C. O. Smith. Dec., 1912.
236. The economic value of the western meadowlark in California. By H. C. Bryant. Feb., 1913.
237. Pork production under California conditions. By J. I. Thompson. June, 1913.
238. The selective improvement of the lima bean. By G. W. Shaw. May, 1913.
239. The culture of tomatoes in California, with special reference to their diseases. By S. S. Rogers. June, 1913.
240. Commercial fertilizers. By J. S. Burd. Sept., 1913.
241. Vine pruning in California, Part I. By F. T. Bioletti. [1913?]. See also 246.
242. Humus in California soils. By R. H. Loughridge. Jan., 1914.
243. The intradermal test for tuberculosis in cattle and hogs. By C. M. Haring and R. M. Bell. Mar., 1914.
244. Utilization of waste oranges. By W. V. Cruess. Mar., 1914.
245. Commercial fertilizers. By J. S. Burd. Aug., 1914.
246. Vine pruning in California, Part II. By F. T. Bioletti. Oct., 1914. Revised in conjunction with 241.
247. Some measuring devices used in the delivery of irrigation water. By California agents of Irrigation Investigations, Office of Experiment Stations, U. S. Department of Agriculture.—Appendix: Data and discussion of tests of measuring devices at Davis field laboratory, January to March, 1914. By S. T. Harding. Jan., 1915.
248. The economic value of Pacific coast kelps. By J. S. Burd. Feb., 1915.
249. Stock-poisoning plants of California. By H. M. Hall and H. S. Yates. Mar., 1915.
250. The loquat. By I. J. Condit. Mar., 1915.
251. The utilization of the nitrogen and organic matter in septic and Imhoff tank sludges. By C. B. Lipman and P. S. Burgess. Apr., 1915.
252. The deterioration of lumber. (A preliminary study.) By M. B. Pratt. May, 1915.
253. Irrigation and soil conditions in the Sierra Nevada foothills, California. By R. D. Robertson and J. W. Nelson. May, 1915.
254. The avocado in California: Pt. I, Culture, production, and marketing. By I. J. Condit.—Pt. II, Composition and food value. By M. E. Jaffa. May, 1915.
255. The citricola scale. By H. J. Quayle. May, 1915.
256. The value of barley for cows fed alfalfa. By G. H. True, F. W. Woll, and E. C. Voorhies. June, 1915.
257. New dosage tablets. By C. W. Woodworth. July, 1915.
258. Mealybugs of citrus trees. By C. P. Clausen. Sept., 1915.
259. Commercial fertilizers. By P. L. Hibbard. Sept., 1915.
260. The determination of availability of nitrogenous fertilizers in various California soil types by their nitrifiability. By C. B. Lipman and P. S. Burgess. Oct., 1915.
261. Melanosis of the walnut, "*Juglans regia*." (A preliminary report.) By H. S. Fawcett. Nov., 1915.
262. Citrus diseases of Florida and Cuba compared with those of California. By H. S. Fawcett. 1915.
263. Size grades for ripe olives. By F. T. Bioletti. Jan., 1916.
264. The calibration of the leakage meter. By C. W. Woodworth. Jan., 1916.
265. Cottony rot of lemons in California. By C. O. Smith. Jan., 1916.
266. A spotting of citrus fruits due to the action of oil liberated from the rind. By H. S. Fawcett. Feb., 1916.
267. Experiments with stocks for citrus. By W. W. Bonns and W. M. Mertz. Mar., 1916.
268. Growing and grafting olive seedlings: Pt. I, Growing olive seedlings. By F. T. Bioletti and W. F. Oglesby.—Pt. II, Grafting olive seedlings. By F. T. Bioletti and F. C. H. Flossfeder. Mar., 1916.
269. Phenolic insecticides and fungicides. By G. P. Gray. Apr., 1916.
270. A comparison of annual cropping, biennial cropping, and green manures on the yield of wheat. By B. A. Madson. Aug., 1916.
271. Feeding dairy calves in California. By F. W. Woll and E. C. Voorhies. Sept., 1916.
272. Commercial fertilizers. By P. L. Hibbard. Oct., 1916.
273. Preliminary report on Kearney vineyard experimental drain, Fresno County, California. By W. W. Weir. Nov., 1916.
274. The common honeybee as an agent in prune pollination. By A. H. Hendrickson. Dec., 1916.
275. The cultivation of belladonna in California. By Albert Schneider. Dec., 1916.
276. The pomegranate. By R. W. Hodgson. Jan., 1917.
277. Sudan grass. By B. A. Madson and P. B. Kennedy. Mar., 1917.
278. Grain sorghums. By B. A. Madson. Apr., 1917.
279. Irrigation of rice in California. By R. D. Robertson. May, 1917.
280. The economical irrigation of alfalfa in Sacramento Valley. By S. H. Beckett and R. D. Robertson. May, 1917.
281. Control of the pocket gopher in California: I, Natural history of the pocket gopher; various methods of control. By J. Dixon.—II, A method of poisoning pocket gophers. By E. R. de Ong. July, 1917. See also 340.
282. Trials with California silage crops for dairy cows. By F. W. Woll and E. C. Voorhies. Aug., 1917.
283. The olive insects of California. By E. O. Essig. Sept., 1917.
284. Irrigation of alfalfa in Imperial Valley. By W. E. Packard. Sept., 1917.
285. The milch goat in California. By E. C. Voorhies. Sept., 1917. Revised reprint June, 1921.
286. Commercial fertilizers. By P. L. Hibbard. Sept., 1917.

287. Vinegar from waste fruits. By W. V. Cruess. Oct., 1917. Revised Oct., 1921. See also 227.
288. Potash from tule and the fertilizer value of certain marsh plants. By P. L. Hibbard. Nov., 1917.
289. Improvements in methods of pickling olives. By F. T. Bioletti and W. V. Cruess. Dec., 1917.
290. The June drop of Washington navel oranges. A progress report. By J. E. Coit and R. W. Hodgson. Jan., 1918.
291. The common honeybee as an agent in prune pollination. Second report. By A. H. Hendrickson. Jan., 1918.
292. Green manure crops in southern California. By W. M. Mertz. Feb., 1918.
293. Sweet sorghums for forage. By B. A. Madson. Apr., 1918.
294. Bean culture in California by G. W. Hendry, with appendix on composition of California varieties of beans by M. E. Jaffa and F. W. Albro, and on insect and other enemies of beans by E. R. de Ong. Apr., 1918. Revised reprint June, 1921.
295. Fire protection for grain fields with special reference to fire-protective appliances for grain-harvesting machinery. By Woodbridge Metcalf. May, 1918.
296. Topping and pinching vines. By F. T. Bioletti and F. C. H. Flossfeder. May, 1918.
297. The almond in California. By R. H. Taylor. Aug., 1918. Revised. Mar., 1921.
298. The seedless raisin grapes. By F. T. Bioletti. Sept., 1918. Revised, May, 1921.
299. The use of lumber on California farms. By M. B. Pratt. Sept., 1918.
300. Commercial fertilizers. By P. L. Hibbard. Nov., 1918.
301. California State dairy cow competition, 1916–18. By F. W. Woll. Nov., 1918.
302. Control of ground squirrels by the fumigation method. By G. R. Stewart and J. S. Burd. Dec., 1918.
303. Grape sirup. Preliminary report. By F. T. Bioletti and W. V. Cruess. Jan., 1919.
304. A study of the effects of freezes on citrus in California: I, A study of the freeze of 1913 in California. By C. S. Milliken, A. R. Tyler, W. W. Bonns, and H. J. Webber.—II [2], Changes that take place in frozen oranges and lemons. By E. E. Thomas, H. D. Young, and C. O. Smith.—III, A test of the efficiency of orchard heating. By A. D. Shamel, L. B. Scott, and C. S. Pomeroy. Jan., 1919.
305. The influence of barley on the milk secretion of cows. By F. W. Woll and E. C. Voorhies. Feb., 1919.
306. Almond pollination. By W. P. Tufts. Mar., 1919.
307. Pollination of the Bartlett pear. By W. P. Tufts. May, 1919.
308. I, Fumigation with liquid hydrocyanic acid. By H. J. Quayle.—II, Physical and chemical properties of liquid hydrocyanic acid. By G. P. Gray and E. R. Hulbirt. June, 1919.
309. The carob in California. By I. J. Condit.—Nutritive value of the carob bean. By M. E. Jaffa and F. W. Albro. June, 1919.
310. Plum pollination. By A. H. Hendrickson. July, 1919.
311. Investigations with milking machines. By F. W. Woll. Sept., 1919.
312. Mariout barley, with a discussion of barley culture in California. By G. W. Hendry. Oct., 1919.
313. Pruning young deciduous fruit trees. By W. P. Tufts. Oct., 1919. Revised. Jan., 1922.
314. Cow-testing associations in California. By E. C. Voorhies. Oct., 1919.
315. Commercial fertilizers. By P. L. Hibbard. Nov., 1919.
316. The kaki or oriental persimmon. By I. J. Condit. Dec., 1919.
317. Selection of stocks in citrus propagation. By H. J. Webber. Jan., 1920.
318. The effects of alkali on citrus trees. By W. P. Kelley and E. E. Thomas. Jan., 1920.
319. Caprifigs and caprification. By I. J. Condit. Mar., 1920.
320. Control of the coyote in California. By Joseph Dixon. Apr., 1920.
321. Commercial production of grape sirup. By W. V. Cruess. May, 1920.
322. The evaporation of grapes. By W. V. Cruess, A. W. Christie, and F. C. H. Flossfeder. June, 1920.
323. Heavy vs. light grain feeding for dairy cows. By F. W. Woll, E. C. Voorhies, and C. V. Castle. July, 1920.
324. Storage of perishable fruits at freezing temperatures. Preliminary report. By W. V. Cruess, E. L. Overholser, and S. A. Bjarnason. Aug., 1920.
325. Rice irrigation measurements and experiments in Sacramento Valley, 1914–1919. By Frank Adams. Sept., 1920.
326. Brown rot of apricots. By W. L. Howard and W. T. Horne. Jan., 1921.
327. Commercial fertilizers 1919–20. By W. H. Dore. Nov. 22, 1920.

INDEXES.

General index of the annual report, bulletins [1–296] and circulars [1–202] of the California Agricultural Experiment Station 1877–1918. By F. W. Woll. (Rpt. College of Agr. and Agr. Expt. Sta., Univ. of Calif. 1917–18, p. 119–139.)

COLORADO.

Agricultural Experiment Station, Fort Collins.

BULLETINS.

1. Reports of experiments in the department of physics and engineering: Irrigation and meteorology. By Elwood Mead. Aug., 1887.
2. Report of experiments in the farm department on grains, grasses, and vegetables. By A. E. Blount. Dec., 1887.
3. Concerning the duties of the secretary of the State board of agriculture and the distribution of college seeds and plants. By F. J. Annis. Dec., 1887.
4. Report of experiments with potatoes and tobacco. By James Cassidy. Feb., 1888.
5. [Announcement of lines of station work.]—Report of experiments in apiary, 1887. By C. M. Brose. Oct., 1888.
6. Notes on insects and insecticides. By James Cassidy. Jan., 1889.
7. Potatoes and sugar beets, 1888. By James Cassidy and David O'Brine. Apr., 1889.
8. Alfalfa: Its growth, composition, digestibility, etc. By David O'Brine and James Cassidy. July, 1889.
9. Soils and alkali. By David O'Brine. Oct., 1889.
10. Tobacco. By David O'Brine and [James Cassidy]. Jan., 1890.
11. Sugar beets. By C. L. Ingersoll and David O'Brine. Apr., 1890.
12. Some Colorado grasses and their chemical analysis. By James Cassidy, David O'Brine, and C. S. Crandall. July, 1890.
13. The measurement and division of water. By L. G. Carpenter. Oct., 1890. Reprinted. July, 1891. See also 13 and 27.
14. Progress bulletin on sugar beets. By D. O'Brine. Jan., 1891.

[2] A summary of these investigations was first published in Jour. Indus. Engin. Chem., 7 (1915), No. 12, p. 1038–1041.

15. Two insect pests: The codling moth and the grapevine leaf hopper. By C. P. Gillette. Apr., 1891.
16. The artesian wells of Colorado and their relation to irrigation. By L. G. Carpenter. July, 1891.
17. A preliminary report on the fruit interests of the State. By C. S. Crandall. Oct., 1891.
18. Index bulletin, indexing first seventeen bulletins for Volume I. By W. J. Quick. Dec., 1891.
19. Observations upon injurious insects, 1891. By C. P. Gillette. May, 1892.
20. I, The best milk tester for the practical use of the farmer and dairyman; II, the influence of food upon the pure fat present in milk. By W. J. Quick. Aug., 1892.
21. Sugar beets; Irish potatoes; fruit raising. By F. L. Watrous. Oct., 1892.
22. Preliminary report on the duty of water. By L. G. Carpenter. Jan., 1893.
23. Colorado weeds. By C. S. Crandall. Apr., 1893.
24. A few common insect pests. By C. P. Gillette. July, 1893.
25. Progress bulletin on the loco and larkspur. By David O'Brine. Oct., 1893.
26. Farm notes for 1893. By W. W. Cooke and F. L. Watrous.—Garden notes for 1893. By M. J. Huffington and C. S. Crandall.—Seeding, tillage, and irrigation. By F. A. Huntley. Feb., 1894.
27. The measurement and division of water (third edition, revised, of Bulletin 13). By L. G. Carpenter. Aug., 1894. See also 150.
28. The Russian thistle. By C. S. Crandall. Sept., 1894.
29. Strawberries and grapes; notes on varieties. By M. J. Huffington. Nov., 1894.
30. I, Farm notes for 1894. By W. W. Cooke and F. L. Watrous.—II, Notes on tomatoes. By M. J. Huffington. Feb., 1895.
31. A prelminary list of the Hemiptera of Colorado. By C. P. Gillette and C. F. Baker. May, 1895. (Tech. Bul. 1.)
32. Sheep feeding in Colorado. By W. W. Cooke. Sept., 1895.
33. Seepage or return waters from irrigation. By L. G. Carpenter. Jan., 1896. See also 180.
34. Cattle feeding in Colorado. By W. W. Cooke. May, 1896.
35. Alfalfa. By W. P. Headden. Sept., 1896. See also 111.
36. Sugar beets. By W. W. Cooke and W. P. Headden. Mar., 1897.
37. The birds of Colorado. By W. W. Cooke. Mar., 1897. (Tech. Bul. 2.). See also 44.
38. Sheep scab; a few insect enemies of the orchard. By C. P. Gillette. Apr., 1897.
39. A study of alfalfa and some other hays. By W. P. Headden. Sept., 1897.
40. Barley. By W. W. Cooke. Oct., 1897.
41. Blight and other plant diseases. By C. S. Crandall. Feb., 1898.
42. Sugar beets in Colorado in 1897. By W. W. Cooke and W. P. Headden. Feb., 1898.
43. I, Colorado Lepidoptera; II, a few new species of Deltocephalus and Athysanus from Colorado; III, a list of original types, etc., in collection. By C. P. Gillette. Mar., 1898. (Tech. Bul. 3.)
44. Further notes on the birds of Colorado, an appendix to Bulletin 37. By W. W. Cooke. Mar., 1898. (Tech. Bul. 4.)
45. The loss of water from reservoirs by seepage and evaporation. By L. G. Carpenter. May, 1898.
46. A soil study: I, The crop grown: Sugar beets. By W. P. Headden. June, 1898.
47. Colorado's worst insect pests and their remedies. By C. P. Gillette. July, 1898. See also 71.
48. Losses from canals from filtration or seepage. By L. G. Carpenter. July, 1898.
49. Meteorology of 1897, with illustrations. By L. G. Carpenter and R. E. Trimble. Sept., 1898.
50. Notes on plum culture. By C. S. Crandall. Dec., 1898.
51. Sugar beets in Colorado in 1898. By W. W. Cooke. Mar., 1899.
52. Pasturing sheep on alfalfa; raising early lambs. By W. W. Cooke. Apr., 1899.
53. Strawberries. By C. S. Crandall and C. H. Potter. Mar., 1900.
54. Apiary experiments: Foundation in comb building. By C. P. Gillette. May, 1900.
55. Forests and snow. By L. G. Carpenter. 1901.
56. The birds of Colorado: a second appendix to Bulletin 37. By W. W. Cooke. May, 1901. (Tech. Bul. 5.)
57. Farm notes: Alfalfa, corn, potatoes, and sugar beets. By W. W. Cooke. July, 1900.
58. A soil study: II, The crop grown: Sugar beets. By W. P. Headden. Aug., 1900.
59. Investigation of the Great Plains: Field notes from trips in eastern Colorado. By J. E. Payne. Dec., 1900. Second edition. Apr., 1901.
60. Bush fruits, including gooseberries, raspberries, blackberries, dewberries. By C. H. Potter. Dec., 1900.
61. *Bromus inermis*. By F. L. Watrous, H. H. Griffin, and J. E. Payne. Dec., 1900.
62. Cantaloupes. By H. H. Griffin. Apr., 1901.
63. Sugar beets: A résumé of the work done by the agricultural experiment station of Colorado. By W. P. Headden. Apr., 1901.
64. Press bulletins Nos. 1–11. June, 1901.
65. A soil study: III, The soil. By W. P. Headden. Sept., 1901.
66. Relation of bovine to human tuberculosis. By G. H. Glover.—Tuberculin tests of the college herd. By B. C. Buffum. Sept., 1901.
67. The distribution of water: Powers and duties of irrigation officials in Colorado. By H. N. Haynes. Dec., 1901.
68. Arkansas Valley substation: Pasture grasses; leguminous crops; cantaloupe blight. By H. H. Griffin. Mar., 1902.
69. Plant diseases of 1901. By Wendell Paddock. Mar., 1902.
70. Potato failures. By F. M. Rolfs. Mar., 1902.
71. Insects and insecticides. By C. P. Gillette. Apr., 1902. A revision of 47. See also 114.
72. A soil study: IV, The ground water. By W. P. Headden. Aug., 1902.
73. The feeding value of beet pulp; feeding beet pulp and sugar beets to cows. By B. C. Buffum and C. J. Griffith. Aug., 1902.
74. Swine feeding in Colorado. By B. C. Buffum and C. J. Griffith. Sept., 1902.
75. Lamb feeding experiments, 1900–1902. By B. C. Buffum and C. J. Griffith. Sept., 1902.
76. Feeding beet pulp to lambs. By H. H. Griffin. Sept., 1902.
77. Investigation of the Great Plains: Unirrigated lands of eastern Colorado. By J. E. Payne. Feb., 1903.
78. The tomato industry of the Arkansas Valley. By H. H. Griffin. Feb., 1903.
79. Treatment of stinking smut in wheat. By Joseph Reed. Mar., 1903.
80. Laying down of peach trees. By Wendell Paddock. Mar., 1903.
81. Onion growing in the Cache à la Poudre Valley. By Wendell Paddock. Mar., 1903.
82. Colorado irrigation waters and their changes. By W. P. Headden. June, 1903.
83. Irrigation waters and their effects. By W. P. Headden. Oct., 1903.
84. An apricot blight. By Wendell Paddock. Oct., 1903.
85. Cantaloupe seed. By P. K. Blinn. Dec., 1903.
86. Crown gall. By Wendell Paddock. Dec., 1903.

87–90. The plains of Colorado: 87, Cattle raising on the plains: 88, dairying on the plains: 89, wheat raising on the plains: 90, unirrigated alfalfa on upland. By J. E. Payne. June, 1904.
91. Potato failures, a second report. By F. M. Rolfs. June, 1904.
92. Large potato vines and no potatoes. By Wendell Paddock. Oct., 1904.
93. Colorado hays and fodders: Digestion experiments. By W. P. Headden. Dec., 1904.
94. Some of the more important insects of 1903 and an annotated list of Colorado Orthoptera. By C. P. Gillette.—Some new Colorado Orthoptera. By Lawrence Brunner.—Bees of the genus Nomada found in Colorado. By T. D. A. Cockerell. Dec., 1904. (Tech. Bul. 6.)
95. Early cantaloupes. By P. K. Blinn. Dec., 1904.
96. The shade trees of Denver. By Wendell Paddock and B. O. Longyear. Feb., 1905.
97. Feeding steers on sugar-beet pulp, alfalfa hay, and farm grains. By W. L. Carlyle, C. J. Griffith, and A. J. Meyer. Feb., 1905.
98. Beet worms and their remedies. The beet web-worm; the beet army worm. By C. P. Gillette.—Cutworms. By S. A. Johnson. Mar., 1905.
99. How can we maintain the fertility of our Colorado soils? By W. P. Headden. Mar., 1905.
100. Flora of Colorado. By P. A. Rydberg. 1905.
101. The western cricket: Life history and remedies. By C. P. Gillette.—Migratory habits. By S. A. Johnson. Apr., 1905.
102. The value of sugar-beet pulp, alfalfa hay, and ground corn in fattening steers. By W. L. Carlyle and C. J. Griffith. Aug., 1905.
103. The thorough tillage system for the plains of Colorado. By W. H. Olin. Oct., 1905.
104. A rust-resisting cantaloupe. By P. K. Blinn. Nov., 1905.
105. A new apple rot. By B. O. Longyear. Nov., 1905.
106. Pruning fruit trees. By Wendell Paddock. Dec., 1905.
107. Peach mildew. By O. B. Whipple. Feb., 1906.
108. Development of the Rockyford cantaloupe industry. By P. K. Blinn. Mar., 1906.
109. Cultural methods for sugar beets. (Progress bulletin.) By W. H. Olin. Apr., 1906.
110. Alfalfa. By W. P. Headden. Apr., 1906.
111. Alfalfa. (A synopsis of Bulletin 35.) By W. P. Headden. May, 1906.
112. A hopperdozer. By P. K. Blinn. Apr., 1906.
113. Larkspur and other poisonous plants. By G. H. Glover. June, 1906.
114. Insects and insecticides. By C. P. Gillette. May, 1906. A revision of 71. See also 210.
115. Fertilizer experiments with sugar beets. By A. H. Danielson. May, 1906.
116. The cottony maple scale. By S. A. Johnson. June, 1906.
117. The Colorado potato industry. By E. R. Bennett. Jan., 1907.
118. Western slope fruit investigation, 1906: Report of the field horticulturist. By O. B. Whipple. Jan., 1907.
119. Western slope fruit investigation, 1906: Report of the field entolmoogist. By E. P. Taylor Feb., 1907.
120. The Howard scale, *Aspidiotus howardi* Ckll. By E. P. Taylor. July, 1907.
121. Alfalfa, sugar beets, cantaloupes. By P. K. Blinn. Mar., 1907.
122. Fruit growers' associations. By Wendell Paddock. Apr., 1907.
123. The plains, some press bulletins, [Nos. 18, 33–39, 46. By J. E. Payne and others]. Jan., 1908.
124. Colorado fodders, an examination into their composition and comparative values. By W. P. Headden. July, 1907.
125. Colorado fodders, a study of comparative values based on Bulletin 124. By W. P. Headden. July, 1907.
126. Cantaloupe breeding. By P. K. Blinn. Jan., 1908.
127. Climate of Colorado: Temperature, 21 years' record at Fort Collins. By L. G. Carpenter and R. E. Trimble. Jan., 1908. See also 182 and 245.
128. Alfalfa studies. By P. K. Blinn. Apr., 1908.
129. Extraction of beeswax. By F. C. Alford. May, 1908.
130. The evergreen trees of Colorado. By B. O. Longyear. May, 1908.
131. Arsenical poisoning of fruit trees. By W. P. Headden. July, 1908.
132. Destruction of concrete by alkali. By W. P. Headden. Sept., 1908.
133. A few orchard plant lice. By C. P. Gillette and E. P. Taylor. Sept., 1908.
134. Orchard plant lice and their remedies. By C. P. Gillette and E. P. Taylor. Sept., 1908.
135. The Australian saltbush, its composition and digestibility; notes on Russian thistle. By W. P. Headden. Dec., 1908.
136. Dewberry growing. By O. B. Whipple. Jan., 1909.
137. Some animal diseases. By G. H. Glover, C. L. Barnes, and B. F. Kaupp. Jan., 1909.
138. Some bacterial diseases of plants. By W. G. Sackett. Jan., 1909.
139. Pruning mature fruit trees. By O. B. Whipple. Feb., 1909.
140. Strawberry growing in Colorado. By B. O. Longyear. Feb., 1909.
141. Grape growing. By O. B. Whipple. Apr., 1909.
142. Tillage, fertilizers, and shade crops for orchards. By Wendell Paddock. Mar., 1909.
143. Cabbage growing. By E. R. Bennett. Mar., 1909.
144. Celery growing in Colorado. By L. J. Reid. Mar., 1909.
145. Dry land farming in eastern Colorado. (Information bulletin.) By H. M. Cottrell. Dec., 1909. [pub.] 1910.
146. Raising hogs in Colorado. By H. M. Cottrell. June, 1909.
147. Top-working fruit trees. By O. B. Whipple. June, 1909.
148. Cement and concrete fence posts. By H. M. Bainer and H. B. Bonebright. June, 1909. See also 161.
149. Carrying range steers through the winter; sugar beets for fattening steers. By W. L. Carlyle and G. E. Morton. June, 1909.
150. On the measurement and division of water. By L. G. Carpenter. June, 1911. A revision of 13 and 27.
151. Ration experiment with lambs, 1906–7, 1907–8; self-feeders for hay. By W. L. Carlyle and G. E. Morton. Jan., 1910.
152. Two common orchard mites: The brown mite; the red spider. By G. P. Weldon. Oct., 1909.
153. Agricultural products shipped into Colorado in 1909. By H. M. Cottrell. Apr., 1910.
154. Alfalfa studies; third progress report. By P. K. Blinn. Apr., 1901.
155. The fixation of nitrogen in some Colorado soils. By W. P. Headden. Feb., 1910.
156. Butter making: Clean milk and commercial starter as factors in butter making. By W. G. Sackett. March, 1910.
157. Arsenical poisoning of fruit trees. By W. P. Headden. May, 1910.
158. A bacterial disease of alfalfa. By W. G. Sackett. April, 1910.
159. A new alfalfa disease: Stem blight. By W. G. Sackett. April, 1910. (An abbreviated edition of 158.)
160. Nitrates in the soil: An explanation of so-called "black alkali" or "brown spots." By W. P. Headden. May, 1910.

161. Cement and concrete fence posts. By H. M. Bainer and H. B. Bonebright. May, 1910. An abbreviated edition of 148.
162. Rabies. By G. H. Glover and B. F. Kaupp. July, 1910.
163. Farm butter making. By H. M. Bainer. July, 1910.
164. Poultry raising. By W. E. Vaplon. Aug., 1910.
165. Ration experiments with swine, 1906–1908. By W. L. Carlyle and G. E. Morton. Aug., 1910.
166. Information concerning the Colorado carriage horse breeding station. By J. O. Williams. Aug., 1910.
167. Life and care of farm machinery in Colorado. By H. M. Bainer and H. B. Bonebright. Sept., 1910.
168. The deterioration of manures under semiarid conditions. By W. P. Headden and Earl Douglass. Nov., 1910.
169. Some insects and mites attacking the peach in Colorado. By G. P. Weldon.—Two plant lice of the peach. By C. P. Gillette and G. P. Weldon. Nov., 1910.
170. Thinning of the winesap; winter and frost injuries of fruit trees. By R. S. Herrick. Nov., 1910.
171. The Colorado raspberry industry. By R. S. Herrick and E. R. Bennett. Nov., 1910.
172. Garden notes, 1910. By E. R. Bennett. Nov., 1910.
173. Notes on dry land orchard. By J. E. Payne. Nov., 1910.
174. Adobe as a building material for the plains. By J. W. Adams. Nov., 1910.
175. The potato industry of Colorado. By C. L. Fitch and E. R. Bennett.—Potato insects. By S. A. Johnson. Nov., 1910.
176. Productiveness and degeneracy of the Irish potato. By C. L. Fitch. Nov., 1910.
177. Hold-over blight in the pear. By W. G. Sackett. June, 1911.
178. The fixation of nitrogen in some Colorado soils. By W. P. Headden. June, 1911.
179. Bacteriological studies of the fixation of nitrogen in certain Colorado soils. By W. G. Sackett. June, 1911.
180. Seepage and return waters: Part I, General discussion and principles; Parts II and III, Detailed measurements. By L. G. Carpenter. 1911.
181. Alfalfa: The realtion of type to hardiness. By P. K. Blinn. Dec., 1911.
182. Colorado climatology. By R. E. Trimble. April, 1912. Supplements 127. See also 245.
183. Deterioration in the quality of sugar beets due to nitrates formed in the soil. By W. P. Headden. May, 1912.
184. The ammonifying efficiency of certain Colorado soils. By W. G. Sackett. Algae in some Colorado soils. By W. W. Robbins. June, 1912.
185. Some poultry diseases. By B. F. Kaupp. Sept., 1912.
186. The fixation of nitrogen in Colorado soils: The distribution of nitrates and their relation to alkalis. By W. P. Headden. May, 1913.
187. Feeding experiments with lambs 1908–9, 1909–10, 1910–11. By G. E. Morton. June, 1913.
188. Ration experiments with swine 1908–1911. By G. E. Morton. June, 1913.
189. Cost of beef production under semirange conditions. By G. E. Morton. June, 1913.
190. Variation studies in brome grass; a preliminary report. By Alvin Keyser. June, 1913.
191. Alfalfa seed production; a progress report. By P. K. Blinn. June, 1913.
192. Home-made cider vinegar. By W. G. Sackett. Nov., 1913.
193. The nitrifying efficiency of certain Colorado soils. By W. G. Sackett. Jan., 1914.
194. Frictional resistance in artificial waterways. By V. M. Cone, R. E. Trimble, and P. S. Jones. Jan., 1914.
195. Small fruits for Colorado. By E. P. Sandsten. May, 1914.
196. Some soil changes produced by microorganisms (Popular). By W. G. Sackett. June, 1914.
197. Hog cholera control. By G. H. Glover.—Necrotic stomatitis. By I. E. Newsom. May, 1914.
198. The onion in Colorado. By E. R. Bennett. June, 1914.
199. Vegetable growing in Colorado; hot beds and cold frames. By R. A. McGinty.—Common insects of the garden. By C. P. Gillette. Aug., 1914.
200. Silos and silage in Colorado. By H. E. Dvorachek. Aug., 1914.
201. Some Colorado mushrooms. By B. O. Longyear. Nov., 1914.
202. Testing and handling of milk and cream. By Roud McCann. Nov., 1914.
203. Farm costs on the Colorado Agricultural College farm. By Alvin Keyser. Dec., 1914.
204. Brisket disease (dropsy of high altitudes). By G. H. Glover and I. E. Newsom. Jan., 1915. See also 229.
205. Yellow berry in wheat, its cause and prevention. By W. P. Headden. Feb., 1915.
206. Spur blight of the red raspberry caused by *Sphaerella rubina*. By W. G. Sackett. May, 1915.
207. The Colorado statute inch and some miner's inch measuring devices. By V. M. Cone. May, 1915.
208. A study of Colorado wheat, Part I. By W. P. Headden. June, 1915.
209. Irrigated agriculture in the San Luis Valley. By V. M. Cone and Alvin Kezer. July, 1915.
210. Insects and insecticides, being a revised edition of Bulletin 114. By C. P. Gillette and G. M. List. Oct., 1915. A revision of 114
211. Colorado plants injurious to livestock. By G. H. Glover and W. W. Robbins. Oct., 1915.
212. Fungous diseases of Colorado crop plants. By W. W. Robbins and O. A. Reinking. Oct., 1915.
213. Poultry raising in Colorado. By W. E. Vaplon. Oct., 1915.
214. Forage crops for the Colorado plains. By Alvin Kezer. 1915.
215. The Dethridge meter. By V. M. Cone. Nov., 1915.
216. Studies of health in potatoes. By C. L. Fitch. Nov., 1915.
217. A study of Colorado wheat, Part II. By W. P. Headden. Mar., 1916.
218. A bacterial stem blight of field and garden peas. By W. G. Sackett. Apr., 1916.
219. A study of Colorado wheat, Part III. By W. P. Headden. July, 1916.
220. Potato growing in Colorado. By E. P. Sandsten. Jan., 1917.
221. Hotbeds and cold frames. By T. F. Limbocker. Jan., 1917.
222. The forcing of strawberries. By Florence I. Kinnison. Feb., 1917.
223. A fruit survey of Mesa County. By E. P. Sandsten, T. F. Limbocker, and R. A. McGinty. Feb., 1917.
224. Native vegetation and climate of Colorado in their relation to agriculture. By W. W. Robbins. Feb., 1917.
225. A comparative bacteriological study of the water supply of the city and county of Denver, Colorado. By W. G. Sackett. Feb., 1917.
226. Beans in Colorado. By Alvin Kezer.—Diseases of beans. By W. G. Sackett. Mar., 1917. See 234.
227. Dry farming in Colorado. By Alvin Kezer. Apr., 1917.
228. Divisors (for the measurement of irrigation water). By V. M. Cone. Apr., 1917.
229. Brisket disease. By G. H. Glover and I. E. Newsom. May, 1917. A revision of 204.
230. The waters of the Rio Grande; a contribution to the hydrology of the San Luis Valley, Coloardo. By W. P. Headden. July, 1917.
231. "Black alkali" in the San Luis Valley. By W. P. Headden. Oct., 1917.
232. Harvesting and storing vegetables for home use. By J. J. Gardner. June, 1917.
233. Grasshopper control. By C. R. Jones. June, 1917.

234. Beans in Colorado. By Alvin Kezer.—Diseases of beans. By W. G. Sackett. Mar., 1918. A revised edition of 226.
235. Reclaiming nitre soil in the Grand Valley. By E. P. Sandsten. Aug., 1917.
236. The dandelion in Colorado. By B. O. Longyear. Jan., 1918.
237. The properties of Colorado wheat. By W. P. Headden. Mar., 1918.
238. Cleaned, treated, and tested seed for Colorado. By W. W. Robbins, H. E. Vasey, and G. E. Egginton. Jan., 1918.
239. Alkalis in Colorado (including nitrates). By W. P. Headden. May, 1918.
240. Irrigation by means of underground porous pipe. By E. B. House. June, 1918.
241. The home vegetable garden. By R. A. McGinty. Feb., 1918.
242. Millet smuts and their control. By H. E. Vasey. Feb., 1918.
243. Potato culture in Colorado. By E. P. Sandsten. Mar., 1918.
244. A study of Colorado wheat, Part IV. By W. P. Headden. June, 1918.
245. Colorado climatology. By R. E. Trimble. June, 1918. Supplements 127 and 182.
246. A new poisonous plant, the whorled milk weed (*Asclepias verticillata*). By G. H. Glover, I. E. Newsom, and W. W. Robbins. July, 1918.
247. A study of Colorado wheat, a résumé of Bulletins 205, 208, 217, 219, 237, and 244. By W. P. Headden. July, 1918.
248. Alfalfa fodder in Colorado. By W. W. Robbins and G. E. Egginton. Nov., 1918.
249. Mendelian inheritance in wheat and barley crosses with probable error studies on class frequencies. By Alvin Kezer and Breeze Boyack. Oct., 1918.
250. Orchard management. By E. P. Sandsten. Apr., 1919.
251. The identification and control of Colorado weeds. By W. W. Robbins and Breeze Boyack. July, 1919.
252. Honey as a carrier of intestinal diseases. By W. G. Sackett. Dec., 1919.
253. Irrigation water as a factor in the dissemination of weed seeds. By G. E. Egginton and W. W. Robbins. June, 1920.
254. Orchard survey of Fremont County. By E. P. Sandsten and C. M. Tompkins. Jan., 1920.
255. Whorled milkweed, the worst stock-poisoning plant in Colorado. By W. L. May. Jan., 1920.
256. Horticulture at high altitudes. By R. A. McGinty. Aug., 1920.
257. Factors that affect alfalfa seed yields. By P. K. Blinn. June, 1920.
258. The fixation of nitrogen in Colorado soils. By W. P. Headden. Feb., 1921.
259. Colorado plant diseases. By J. G. Leach. Apr., 1921.
260. Colorado weed seeds. By C. E. Egginton. Jan., 1921.
261. Report of potato investigations. By C. F. Clark. Jan., 1921.
262. Sod disease of chickens (vesicular dermatitis). By I. E. Newsom and W. H. Feldman. Oct., 1920.
263. General index to Colorado experiment station publications, Bulletins 1–249, Press Bulletins 1–58, Reports 1–31. By Arlene Dilts. Feb., 1921.
264. Perennial peppergrass, a noxious weed in Colorado. By A. K. Peitersen and R. T. Burdick. Oct., 1920.

INFORMATION BULLETIN.

Preliminary report on steer feeding experiments, 1914–15 and 1916–17. By G. E. Morton and T. E. Leiper. Jan., 1918.

SEED LABORATORY BULLETINS.

V. I, No. 1. The Colorado seed act. By W. W. Robbins and G. E. Egginton. Sept., 1917
V. I, No. 2. First annual report. By W. W. Robbins. Dec., 1917.
V. I, No. 3. Second annual report, [December 1, 1917, to November 30, 1918]. By W. W. Robbins. Dec., 1918.
V. I, No. 4. Colorado pure seed law. By W. W. Robbins. Aug., 1919.
V. I, Nos. 5–6, listed in the third annual report of the Colorado Seed Laboratory (v. 2, No. 2) were not issued.
V. II, No. 1. Not issued.
V. II, No. 2. Third annual report [December 1, 1918, to November 30, 1919]. By W. W. Robbins and G. E. Egginton. Dec., 1919.

BULLETINS, TECHNICAL SERIES.

Bulletins 31, 37, 43, 44, 56, and 94 of the regular series are also designated Technical Bulletins Nos. 1, 2, 3, 4, 5, and 6, respectively.

INDEXES.

Index to Bulletins 1–17 (See Bulletin 18).
General index to Colorado Experimental Station publications, Bulletins 1–249, Press bulletins 1–58, Reports 1–31. By Arlene Dilts. Feb., 1921. (Colo. Agr. Expt. Sta. Bul. 263).

CONNECTICUT.

The Connecticut Agricultural Experiment Station, New Haven.[3]

BULLETINS.

With the exception of Bulletins 4, 19, 20, the first of 67 numbers are mimeographed or printed slips for the use of the agricultural press.
[1.] [Analysis of "composition for grass."] By S. W. Johnson. Aug. 18, 1877.
[2.] [Analysis of "composition for vegetables."] By S. W. Johnson. Aug. 28, 1877.
[3.] [Analysis of soluble Pacific guano.] By S. W. Johnson. Sept. 8, 1877.
[4.] [Fertilizers: Analyses, explanations, work in progress.] Oct., 1877.
[4½.] Fertilizer analysis. By S. W. Johnson. Mar. 11, 1878.
5. Fertilizer analyses. By S. W. Johnson. Mar. 19, 1878.
6. Fertilizer analyses. By S. W. Johnson. Mar. 29, 1878.
7. Fertilizer analyses. By S. W. Johnson. Apr. 9, 1878.
8. Fertilizer analyses. By S. W. Johnson. Apr. 24, 1878.
9. Analyses of leached ashes and egg food. By S. W. Johnson. Apr. 30, 1878.
10. Fertilizer analyses. By S. W. Johnson. May 7, 1878.
11. [Fertilizer analyses.] By S. W. Johnson. May 11, 1878.
12. Fertilizer analyses. By S. W. Johnson. Mar. 18, 1878.

[3] For accounts of work done at Middletown prior to the establishment of the station at New Haven, see the following reports: Preliminary report, May 1, 1876.—First annual report for 1876.—Report of work, 1877–78, with an account of field experiments with fertilizers.

13. Fertilizer analyses. By S. W. Johnson. May 25, 1878.
14. Fertilizer analyses. By S. W. Johnson. June 1, 1878.
15. Fertilizer analyses. By S. W. Johnson. June 8, 1878.
16. Fertilizer analyses. By S. W. Johnson. June 15, 1878.
17. Fertilizer analyses. By S. W. Johnson. June 22, 1878.
18. Fertilizer analyses. By S. W. Johnson. July 13, 1878.
19. Fertilizer analyses. By S. W. Johnson. Sept. 18, 1878.
20. Fertilizer analyses. By S. W. Johnson. Nov. 12, 1878.
21. Fertilizer analyses. By S. W. Johnson. Mar. 29, 1879.
22. Fertilizer analyses. By S. W. Johnson. [Apr. 5, 1879].
23. Analyses of hay. By S. W. Johnson. Mar. 11, 1879.
24. Fertilizer analyses. By S. W. Johnson. Apr. 25, 1879.
25. Fertilizer analyses. By S. W. Johnson. May 2, 1879.
26. Fertilizer analyses. By S. W. Johnson. May 16, 1879.
27. Fertilizer analyses. By S. W. Johnson. May 23, 1879.
28. Fertilizer analyses. By S. W. Johnson. June 6, 1879.
29. Fertilizer analyses. By S. W. Johnson. June 13, 1879.
30. Fertilizer analyses. By S. W. Johnson. June 20, 1879.
31. Fertilizer analyses. By S. W. Johnson. July 4, 1879.
32. Fertilizer analyses. By S. W. Johnson. July 18, 1879.
33. Fertilizer analyses. By S. W. Johnson. Oct. 7, 1879.
34. Analyses of hay. By S. W. Johnson. Oct. 17, 1879.
35. Analyses of maize kernel. By S. W. Johnson. Nov. 8, 1879.
36. Shell marl, marine mud, and seaweed, oyster shell lime. By [S. W. Johnson.] Feb. 7, 1880.
37. Fresh water sediments; peat or swamp muck. By S. W. Johnson. Feb. 14, 1880.
38. Fertilizer analyses. By S. W. Johnson. Apr. 3, 1880.
39. Fertilizer analyses. By S. W. Johnson. Apr. 10, 1880.
40. Fertilizer analyses. By S. W. Johnson. Apr. 24, 1880.
41. Fertilizer analyses. By S. W. Johnson. May 1, 1880.
42. Fertilizer analyses. By S. W. Johnson. May 8, 1880.
43. Fertilizer analyses. By S. W. Johnson. May 29, 1880.
44. [Fertilizer analyses.] By S. W. Johnson. June 12, 1880.
45. Fertilizer analyses. By S. W. Johnson. June 18, 1880.
46. Fertilizer analyses. By S. W. Johnson. July 15, 1880.
47. Fertilizer analyses. By S. W. Johnson. Sept. 21, 1880.
48. Forrester's fertilizers. By S. W. Johnson. Oct. 23, 1880.
49. Analyses of swamp muck. By S. W. Johnson. Oct. 30, 1880.
50. Fertilizer analyses. By S. W. Johnson. Dec. 18, 1880.
51. Fertilizer analyses; sorghum seed; kiln-dried brewer's grains; Paris green on cornstalks. By S. W. Johnson. Jan. 27, 1881.
52. Cost of active ingredients of fertilizers during 1880 and trade value adopted by the station for 1881; fertilizer analyses. By S. W. Johnson. Feb. 2, 1881.
53. The bird guano and fertilizer; apple pomace as a fertilizer; apple pomace as cattle food. By S. W. Johnson. Feb. 16, 1881.
53. [i. e. 54]. Ashes from factories in Canada; Quinnipiac coarse bone. By S. W. Johnson. Mar. 30, 1881.
55. Night soil; maize ensilage. By S. W. Johnson. Apr. 5, 1881.
56. [Fertilizer analyses.] By S. W. Johnson. Apr. 15, 1881.
57. [Fertilizer analyses.] By S. W. Johnson. Apr. 21, 1881.
58. [Fertilizer analyses]; trade values for 1881. By S. W. Johnson. Apr. 28, 1881.
59. Fertilizer analyses. By S. W. Johnson. May 5, 1881.
60. An act concerning commercial fertilizers; fertilizer analyses. May 12, 1881.
61. Special manures and superphosphates. By S. W. Johnson. May 26, 1881
62. [Fertilizer analyses.] By S. W. Johnson. June 3, 1881.
63. [Fertilizer analyses.] By S. W. Johnson. June 9, 1881.
64. [Fertilizer analyses.] By S. W. Johnson. June 17, 1881.
65. [Fertilizer analyses.] By S. W. Johnson. June 23, 1881.
66. [Fertilizer analyses.] By S. W. Johnson. Sept. 1, 1881.
67. [Fertilizer analyses.] By S. W. Johnson. Oct. 15, 1881.
68. Trade value for 1882; fertilizer analyses; fodders. By S. W. Johnson. Mar. 8, 1882.
69. Fertilizer analyses. By S. W. Johnson. May 23, 1882.
70. Fertilizer analyses. June 30, 1882.
71. Fertilizer analyses. By S. W. Johnson. July 29, 1882.
72. Fertilizer law; location of the experiment station; fertilizer analyses. By S. W. Johnson. Aug. 25, 1882.
73. An act concerning commercial fertilizers; observance of the fertilizer law; fertilizer analyses; trade values for 1883. Apr., 1883.
74. [Analyses of fertilizers.] By S. W. Johnson. May 1, 1883.
75. Observance of the fertilizer law; fertilizer analyses. June 11, 1883.
76. Observance of the fertilizer law; fertilizer analyses. July 30, 1883.
77. Trade values of fertilizing ingredients in raw material and chemicals for 1884; fertilizer analyses; analyses of the ash of healthy and diseased peach wood. By S. W. Johnson. Apr., 1884.
78. Explanations concerning the analysis of fertilizers and the valuation of their active ingredients; fertilizer analyses; the Connecticut law. By S. W. Johnson. May, 1884.
79. Observance of the fertilizer law; fertilizer analyses. July, 1884.
80. Observance of the fertilizer law; fertilizer analyses; trade values. By S. W. Johnson. Sept., 1884.
81. To manufacturers and dealers in commercial fertilizers in Connecticut; fertilizer analyses. By S. W. Johnson. Oct., 1884.
82. [Fertilizers.] By S. W. Johnson. Mar., 1885.
83. [Fertilizers.] Apr., 1885.
84. [Fertilizers.] June, 1885.
85. Fertilizer analyses. Oct., 1885.
86. To manufacturers and dealers in commercial fertilizers in Connecticut; fertilizer analyses; fodder analyses. Jan., 1886.
87. Valuation of fertilizers; fertilizer analyses; analysis of Florida oranges; fodder analyses. Mar., 1886.
88. Gratuitous analysis of commercial fertilizers; instructions for sampling commercial fertilizers; observance of the fertilizer law; trade values; fertilizer analyses. July, 1886.
89. Analyses of superphosphates and special manures. Oct., 1886.
90. Valuation of fertilizers; fertilizer analyses. By S. W. Johnson. Mar., 1887.
91. Notes [concerning samples of grass s]; fertilizer analyses. By S. W. Johnson. Apr., 1887.
92. [Fertilizers: Observance of the law; analyses.] Sept., 1887.

93. [List of grasses and forage plants in the station garden.] Nov., 1887.
94. [Fertilizers: Trade values and analyses.] Apr., 1888.
95. [Fertilizers: Home mixtures, analyses, observance of the law.] June, 1888.
96. On the valuation of feeding stuffs; analyses of feeding stuffs; the average composition of feeds for dairy stock. Jan., 1889.
97. Fungous diseases of plants; fertilizers. Apr., 1889.
98. Home-mixed fertilizers. June, 1889.
99. Fertilizer analyses. June, 1889.
100. Analysis of sylvanit; analyses of unleached wood ashes; analyses and valuations of commercial mixed fertilizers. Sept., 1889.
101. [Fertilizer analyses.] Jan., 1890.
102. Fungicides. By Roland Thaxter. Mar., 1890.
103. Fertilizers. May, 1890.
104. Fertilizers. Oct., 1890.
105. Notice as to supply of station reports; corrections.—The potato scab. By Roland Thaxter. The proteids of the oat kernel. By T. B. Osborne.—Milk testing. Dec., 1890.
106. The Babcock method of determining fat in milk and cream for the use of creameries; analyses of butter from exhibit at the dairymen's meeting; fertilizers. Mar., 1891. See also 117.
107. The Connecticut species of *Gymnosporangium* (cedar apples). By Roland Thaxter. Apr., 1891.
108. Examination of the seed of orchard grass; ash analysis of white globe onions; on the determination of fat in cream by the Babcock method. May, 1891.
109. Fertilizers. Aug., 1891.
110. Notice as to supply of station reports; Canada ashes; a request for samples of Indian corn. correction. By S. W. Johnson. Dec., 1891.
111. Notice as to bulletins [and] reports.—Common fungous diseases and methods of treatment. By W. C. Sturgis. Mar., 1892. See also 115.
112. On the Gunning-Kjeldahl method and a modification applicable in the presence of nitrates. By A. L. Winton. June, 1892.
113. Notice as to bulletins [and] reports, fertilizers. Sept., 1892.
114. Notice as to bulletins, fertilizers. Dec., 1892.
115. Common fungous diseases and their treatment; a provisional spraying calendar. By W. C. Sturgis. Mar., 1893. A revision of 111. Revised May, 1893.
116. The Connecticut fertilizer law: acts concerning Connecticut fertilizers; cottonseed meal as a fertilizer and feed. Oct., 1893.
117. The Babcock method of determining fat in milk and milk products. Jan., 1894. Supersedes 106.
118. A provisional bibliography of the more important works published by the U. S. Department of Agriculture and the agricultural experiment stations of the United States from 1886 to 1893, inclusive, on fungous and bacterial diseases of economic plants. By W. C. Sturgis. Mar., 1894.
119. The Babcock test as a basis for payment in cream-gathering creameries. By A. L. Winton and A. W. Ogden. May, 1894.
120. Analyses of fertilizers; trade values of fertilizer ingredients for 1895; poultry foods. By E. H. Jenkins. Apr., 1895.
121. The elm leaf beetle.—The San José scale. By W. C. Sturgis and W. E. Britton.—Trade values of fertilizer ingredients in raw materials and chemicals for 1895, correction. July, 1895. Revised July, 1895.
122. Cost of nitrogen, phosphoric acid, and potash in Connecticut, spring months of 1896.—The proper use of tables of analyses of fertilizers and fertilizer chemicals. By E. H. Jenkins. May, 1896.
123. Examination of food products sold in Connecticut. By A. W. Odgen, A. L. Winton, and E. H. Jenkins. July, 1896.
124. The cost of plant food in Connecticut, spring months of 1897. June, 1897.
125. Preparation and application of fungicides. By W. C. Sturgis. Apr., 1898.
126. Insecticides, their preparation and use. By W. E. Britton. May, 1898.
127. The cost of plant food in Connecticut, spring months of 1898. May, 1898.
128. Commercial feeding stuffs in the Connecticut market. Apr., 1899.
129. Inspection and care of nursery stock. By W. E. Britton. May, 1899.
130. Commercial feeding stuffs in the Connecticut market. [By E. H. Jenkins.] Jan., 1900.
131. The protection of shade trees in towns and cities. [By E. H. Jenkins and others.] Nov., 1900.
132. Condimental and medicinal cattle and poultry foods. Feb., 1901.
133. Commercial feeding stuffs in the Connecticut market. [By E. H. Jenkins.] Feb., 1901.
134. The new law concerning insect pests. By W. E. Britton. Aug., 1901.
135. The San José scale insect, its appearance and spread in Connecticut. By W. E. Britton. Dec., 1901. See also 165.
136. Preliminary experiments in spraying to kill the San José scale insect, season of 1901. By W. E. Britton. Feb., 1902.
137. The growing of tobacco under shade in Connecticut. By E. H. Jenkins. Feb., 1902.
138. Commercial feeding stuffs in the Connecticut market. [By E. H. Jenkins.] Apr., 1902.
139. The apple-tree tent caterpillar, *Clisiocampa americana*, Harris. By W. E. Britton. July, 1902. See also 177.
140. The white fly or plant-house aleyrodes, *Aleyrodes vaporariorum* Westw? By W. E. Britton. Sept., 1902.
141. Commercial feeding stuffs in the Connecticut market. [By E. H. Jenkins.] Jan., 1903.
142. Spray calendar. By W. E. Britton and G. P. Clinton. 1903.
143. Two common scale insects of the orchard: The scurfy bark louse *Chionaspis furfurus*, Fitch; the oyster shell bark louse *Mytilaspis pomorum*, Bouché. By W. E. Britton. May, 1903.
144. Fighting the San José scale insect in 1903. By W. E. Britton and B. H. Walden. Oct., 1903.
145. Commercial feeding stuffs in the Connecticut market. [By E. H. Jenkins.] Jan., 1904.
146. San José scale-insect experiments in 1904. By W. E. Britton and B. H. Walden. Oct., 1904.
147. Commercial feeding stuffs now in the Connecticut market. [By E. H. Jenkins.] Jan., 1905.
148. The preparation of tobacco seed. By A. D. Shamel. Mar., 1905.
149. A new and valuable cover crop for tobacco fields. By A. D. Shamel. June, 1905.
150. The selection of tobacco seed plants. By A. D. Shamel. June, 1905.
151. The chief injurious scale insects of Connecticut. By W. E. Britton. June, 1905.
152. The improvement of corn in Connecticut. By E. M. East. Jan., 1906.
153. The gypsy moth and the brown-tail moth. By W. E. Britton. Mar., 1906.
154. Chestnut in Connecticut and the improvement of the wood lot. By A. F. Hawes. Sept., 1906.
155. The elm leaf bettle. By W. E. Britton. May., 1907.
156. Cotton seed meal as a fertilizer. By E. H. Jenkins and J. P. Street. June, 1907.

157. Lead arsenate and Paris green: I, Their chemical composition. By J. P. Street.—II, Directions for their use as insecticides. By W. E. Britton. Sept., 1907.
158. The relation of certain biological principles to plant breeding. By E. M. East. Nov., 1907.
159. Spray calendar. Jan., 1908.
160. Clover seed in the Connecticut market. By E. H. Jenkins and Mary H. Jagger. June, 1908.
161. Feeds, seeds, and weeds. By E. H. Jenkins. Jan., 1909.
162. Forest survey of Litchfield and New Haven Counties, Connecticut. By A. F. Hawes and R. C. Hawley. Jan., 1909.
163. Agricultural lime: Its sources, composition, and prices, with notes on its action in the soil. By E. H. Jenkins and E. M. East. Feb., 1909.
164. Garden and field seeds sold in Connecticut in 1908–9. By E. H. Jenkins and Mary H. Jagger. Oct., 1909.
165. The San José scale and methods of controlling it. By W. E. Britton. Nov., 1909. A revision of 135.
166. The management of tobacco seed beds. By W. M. Hinson and E. H. Jenkins. Nov., 1910.
167. Inheritance in maize. By E. M. East and H. K. Hayes. Apr., 1911.
168. Improvement in corn. By H. K. Hayes and E. M. East. June, 1911.
169. The leopard moth, *Zeuzera pyrina* Linn. (=*aesculi* Linn.). Nov., 1911.
170. The trade in cottonseed meal. By E. H. Jenkins. Apr., 1912.
171. Correlation and inheritance in *Nicotiana tabacum*. By H. K. Hayes. May, 1912.
172. The net weight or volume of food products which are sold in packages. By J. P. Street. July., 1912
173. The mosquito plague of the Connecticut coast region and how to control it. By W. E. Britton. July, 1912.
174. Wood-using industries of Connecticut. By A. H. Pierson. Jan., 1913.
175. The cost of agricultural lime in Connecticut. By E. H. Jenkins and J. P. Street. Feb., 1913.
176. Tobacco breeding in Connecticut. By H. K. Hayes, E. M. East, and E. G. Beinhart. May, 1913.
177. The apple-tree tent-caterpillar. (*Malacosoma* (*Clisiocampa*) *americana* Fabr.). By W. E. Britton. Aug., 1913. Supersedes 139.
178. The chestnut bark disease (*Endothia gyrosa* var. *parasitica* (Murr.) Clint.). By E. M. Stoddard and A. E. Moss. Sept., 1913.
179. Soy beans. By E. H. Jenkins. Oct., 1913.
180. Studies on the tobacco crop of Connecticut. By E. H. Jenkins. Jan., 1914.
181. Some common lady beetles of Connecticut. By W. E. Britton. Jan., 1914.
182. The brown-tail moth (*Euproctis chrysorrhoea* Linn.). By W. E. Britton. Mar., 1914.
183. Spray calendar. By W. E. Britton and G. P. Clinton. n.d.
184. Spray treatment, etc., for orchards. By W. E. Britton and G. P. Clinton. Dec., 1914.
185. Tests of soy beans, 1914. [By E. H. Jenkins and others.] Jan., 1915.
186. The gypsy moth (*Porthetria dispar* Linn.). By W. E. Britton. Feb., 1915.
187. Index to reports on food products and drugs of the Connecticut Agricultral Experiment Station, 1896–1914. By J. P. Street. June, 1915.
188. Further experiments on inheritance in maize. By H. K. Hayes and E. M. East. Sept., 1915.
189. A mosquito survey at the mouth of the Connecticut River. By W. E. Britton and P. L. Buttrick. Dec., 1915.
190 Insects attacking cabbage and allied crops in Connecticut. By W. E. Britton and Q. S. Lowry. Jan., 1916.
191. Tests of soy beans, 1915. By E. H. Jenkins, J. P. Street, and C. D. Hubbell. Apr., 1916.
192. Observations on alfalfa. By E. J. Jenkins. Jan., 1917.
193. Tests of soy beans, 1916; note on the plant food in a corn crop. By E. J. Jenkins, J. P. Street, and C. D. Hubbell. Mar., 1917.
194. Manure from the sea. By E. H. Jenkins and J. P. Street. July, 1917.
195. Insects injuring stored food products in Connecticut. By W. E. Britton. July, 1917. See 203.
196. Economy in feeding the family: I, Some essential facts regarding nutrition. By J. P. Street and E. H. Jenkins. Nov., 1917.
197. Economy in feeding the family: II, The cereal breakfast foods. By J. P. Street. Nov., 1917.
198. Domestic supplies of potash. By E. H. Jenkins. Nov., 1917.
199. Spray calendar. By W. E. Britton and G. P. Clinton. n. d.
200. Twenty-second report on food products and Tenth report on drug products, 1917. By J. P. Street. Dec., 1917.
201. Economy in feeding the family: III, Food oils and fats. By E. M. Bailey. Jan., 1918.
202. Economy in feeding the family: IV, An experience in keeping poultry in the city. Jan., 1918.
203. Seventeenth report of the State entomologist of Connecticut for the year 1917. By W. E. Britton [and others]. 1918. Contains reprint of 195.
204. Fertilizer report for 1917. By E. H. Jenkins and J. P. Street. Feb., 1918.
205. Beekeeping for Connecticut. By A. W. Yates. Apr., 1918.
206. Report on commercial feeding stuffs, 1917. By E. M. Bailey.—[Index, title page and table of contents to forty-first annual report of the Connecticut Agricultural Experiment Station ... for ... 1916–17, and reports of board of control and treasurer.] Feb., 1918.
207. The effects of inbreeding and crossbreeding upon development. By D. F. Jones. Sept., 1918.
208. Insects attacking the potato crop in Connecticut. By W. E. Britton. Oct., 1918.
209. Fertilizer report for 1918. By E. H. Jenkins and E. M. Bailey. Dec., 1918.
210. Twenty-third report on food products and Eleventh report on drug products. 1918. By E. M. Bailey. Jan., 1919.
211. Eighteenth report of the State entomologist for the year 1918. By W. E. Britton [and others]. 1919.
212. Report on commercial feeding stuffs 1918. By E. M. Bailey. Mar., 1919.
213. Economy in feeding the family: V, Condensed milk, malted milk, milk powders. By J. P. Street. July, 1919.
214. Report of the botanist for years 1917 and 1918. By G. P. Clinton [and others]. Sept., 1919.
215. Economy in feeding the family: The food value of milk. Edna L. Ferry. Dec., 1919.
216. Insects attacking squash, cucumber, and allied plants in Connecticut. By W. E. Britton. Dec., 1919.
217. Fertlizer report for 1919. E. H. Jenkins and E. M. Bailey. Dec., 1919.
218. Nineteenth report of the State entomologist of Connecticut for the year 1919. By W. E. Britton. 1920.
219. Twenty-fourth report on food products and Twelfth report on drug products. Part I, By E. M. Bailey. Dec., 1919.
220. Twenty-fourth report on food products and Twelfth report on drug products. Part II, Diabetic foods. By E. M. Bailey. Feb., 1290.
221. Report on commercial feeding stuffs. By E. M. Bailey. Mar., 1920.
222 Report of the botanist, 1919: New or unusual plant injuries and diseases found in Connecticut, 1916–1919. By G. P. Clinton. Aug., 1920.
223. Fertilizer report for 1920. By E. H. Jenkins and E. M. Bailey. Oct., 1920.

Storrs Agricultural Experiment Station, Storrs.

BULLETINS.

1. [Account of organization and outline of work undertaken by the station.] By W. O. Atwater. June, 1888.
2. Experiments on the effects of tillage on soil moisture; meteorological observations; grass and forage garden. By W. O. Atwater. Oct., 1888.
3. Roots of plants as manure.—Meteorological observations. By E. A. Bailey. Feb., 1889.
4. Meteorological observations. By E. A. Bailey.—Bacteria in milk and its products. By H. W. Conn. July, 1889.
5. Atmospheric nitrogen as plant food. [By C. D. Woods.]—Meteorological observations. By E. A. Bailey. Oct., 1889.
6. Grass and forage garden; grasses and legumes. By C. D. Woods and C. S. Phelps. Aug., 1890.
7. Chemistry and economy of food. By W. O. Atwater and C. D. Woods. Sept., 1891.
8. Summary of the annual report for 1891. Apr., 1892.
9. Soiling and soiling crops; feeding experiments with soiling crops. By C. S. Phelps. Nov., 1892.
10. Results of experiments with fertilizers on different classes of soils. By C. S. Phelps. Mar., 1893.
11. Summary of annual report for 1892. Apr., 1893.
12. The ripening of cream by artificial bacteria cultures. By H. W. Conn. Feb., 1894.
13. Rations fed to milch cows in Connecticut. By C. D. Woods and C. S. Phelps. Oct., 1894.
14. The elm leaf beetle. May, 1895.
15. Food investigations and publications. By W. O. Atwater and C. D. Woods. Oct., 1895.
16. Experiments in cream ripening, flavor, aroma, acid. By H. W. Conn. May, 1896.
17. Hay substitutes. By C. S. Phelps. June, 1896.
18. Nitrogenous feeding stuffs. By C. S. Phelps. Dec., 1897.
19. The present condition of bovine tuberculosis in Europe. By H. W. Conn. Feb., 1899.
20. A study of dairy cows. By C. L. Beach. Mar., 1900.
21. The ripening of cream. By H. W. Conn. Mar., 1900.
22. The soy bean as a forage and seed crop. By C. S. Phelps. Apr., 1901.
23. The relation of bovine tuberculosis to that of man, and its significance in the dairy herd. By H. W. Conn.—Results of experiments with tuberculous cows and the use of their milk in feeding calves. By C. S. Phelps. Apr., 1902.
24. The history of a tuberculous herd of cows. By C. L. Beach. Nov., 1902.
25. The covered pail a factor in sanitary milk production. By W. A. Stocking, jr. Mar., 1903. Second edition, Mar., 1903.
26. The relation of temperature to the keeping property of milk. By H. W. Conn. Oct., 1903.
27. Poultry as food. By R. D. Milner. Dec., 1903.
28. Dairy observations: Dehorning; milking records; skim milk fed calves. By C. L. Beach. Jan., 1904.
29. Records of a dairy herd for five years. By C. L. Beach. Feb., 1904.
30. Spraying notes for 1903: San José scale; melon blight. By E. R. Bennett. Mar., 1904.
31. The food value of a pound of milk solids in milk poor and rich in fat content. By C. L. Beach. Nov., 1904.
32. Protecting cows from flies. By C. L. Beach and A. B. Clark. Dec., 1904.
33. A successful brooder house. By F. H. Stoneburn. Jan., 1905.
34. Discussion of the amount of protein required in the ration for dairy cows. By C. L. Beach. Jan., 1905.
35. The Camembert type of soft cheese in the United States. By H. W. Conn [and others]. Apr., 1905.
36. Poultry suggestions for the amateur. By C. K. Graham. June, 1905.
37. The so-called "germicidal property" of milk. By W. A. Stocking, jr. June, 1905.
38. The marketing of poultry products. By F. H. Stoneburn. Jan., 1906.
39. Pig-feeding experiments. By C. L. Beach and H. L. Garrigus. Jan., 1906.
40. Creamery problems. By C. L. Beach. Apr., 1906.
41. Spraying notes, 1904–5. By E. R. Bennett. Apr., 1906.
42. Quality of milk affected by common dairy practices. By W. A. Stocking, jr. June, 1906.
43. The facility of digestion of foods a factor in feeding. By C. L. Beach. Oct., 1906.
44. Poultry observations: Causes of death of young chicks; substitute of snow for water. By C. K. Graham. Nov., 1906.
45. The apple-leaf miner. By C. D. Jarvis. Dec., 1906.
46. Directions for making the Camembert type of cheese. By T. Issajeff. Feb., 1907.
47. Milking machines: I, Effect upon quality of milk. By W. A. Stocking, jr., and C. J. Mason.—II, Effect upon milk yield. By C. L. Beach. May, 1907.
48. Comparative studies with covered milk pails. By W. A. Stocking, jr. May, 1907.
49. Petroleum emulsion for the San José scale. By C. D. Jarvis. Nov., 1907. See 54.
50. Squab investigations. By C. K. Graham. Nov., 1907.
51. Sources of bacteria in milk. By W. M. Esten and C. J. Mason. Apr., 1908.
52. Poultry culture. By C. K. Graham. June, 1908.
53. Improving dairy conditions. By J. M. Trueman. June, 1908.
54. Proprietary and home-made miscible oils for the control of the San José scale. By C. D. Jarvis. Dec., 1908. Supersedes 49.
55. Infection and preservation of eggs. By G. H. Lamson. Feb., 1909.
56. Control of insects and of plant diseases. By C. D. Jarvis. Apr., 1909.
57. A study of some Connecticut dairy herds. By J. M. Trueman. May, 1909.
58. Camembert cheese problems in the United States. By Charles Thom. June, 1909.
59. *Bacterium lactis acidi* and its sources. By W. M. Esten. Aug., 1909.
60. Bacillary white diarrhea of young chicks. By L. F. Rettger and F. H. Stoneburn. Dec., 1909.
61. Apple growing in New England: I, The apple industry: II, renovation of old apple orchards. By C. D. Jarvis. Jan., 1910.
62. Apple growing in New England: III, Planting the apple orchard. By C. D. Jarvis. Feb., 1910.
63. The cost of feeding heifers. By J. M. Trueman. Apr., 1910.
64. General weather review and temperature curves for the locality of Storrs, 1909. By W. M. Esten and C. J. Mason. Sept., 1910.
65. Butter making on the farm. By J. M. Trueman. Feb., 1911.
66. Apple growing in New England: IV, Orchard management. By C. D. Jarvis. Mar., 1911.
67. Water glass a preservative for eggs. By G. H. Lamson. Mar., 1911.
68. Bacillary white diarrhea of young chicks. (Second report.) By L. F. Rettger and F. H. Stoneburn. Apr., 1911.
69. New England trees in winter. By A. F. Blakeslee and C. D. Jarvis. June, 1911.
70. Silage fermentation. By W. M. Esten and C. J. Mason. Jan., 1912.
71. Some apple insects of Connecticut. By G. H. Lamson. Mar., 1912.
72. Spraying cucumbers and melons. By C. D. Jarvis. June, 1912.

73. Records of a dairy herd for five years. By J. M. Trueman. June, 1912.
74. Bacillary white diarrhea of young chicks. By L. F. Rettger, W. F. Kirkpatrick, and F. H. Stoneburn. Dec., 1912.
75. The bacteriology of the hen's egg, with special reference to its freedom from microbic invasion. By L. F. Rettger. Nov., 1913.
76. Carbon dioxide in incubation. By G. H. Lamson, jr. and H. D. Edmond. Mar., 1914.
77. Bacillary white diarrhea of young chicks. (Fourth report.) By L. F. Rettger, W. F. Kirkpatrick, and R. E. Jones. June, 1914.
78. Cheeses of the Neufchatel group. By K. J. Matheson, Charles Thom, and J. N. Currie. June, 1914.
79. Studies relating to the Roquefort and Camembert type of cheese. By Charles Thom, J. N. Currie, and K. L. Matheson.—General weather review for the locality of Storrs, Connecticut, 1912. By W. Esten and C. J. Mason.—General weather review ... 1913. By W. M. Esten. June, 1914.
80. Chickens: Milk feeding and its influence on growth and mortality, a comparative study of the value of sweet and sour milk. By L. F. Rettger, W. F. Kirkpatrick, and L. E. Card. Apr., 1915.
81. Poultry house construction. By R. E. Jones and L. E. Card. June, 1915.
82. Third annual international egg-laying contest. By W. F. Kirkpatrick and L. E. Card. July, 1915.
83. Bacteriological studies: Bacterial studies of Camembert cheese: tests and comparisons of commercial lactic starters: tests of various brands of litmus for bacteriological work: the bacterial content of ice cream. By W. M. Esten and C. J. Mason. Sept., 1915.
84. An electric incubator for bacteriological work. By W. M. Esten. Sept., 1915.
85. Bacillary white diarrhea of young chicks, its eradication by the elimination of infected breeding stock. (Fifth report.) By L. F. Rettger, W. F. Kirkpatrick, and R. E. Jones. Dec., 1915.
86. Some lice and mites of the hen. By G. H. Lamson, jr., and J. A. Manter. Mar., 1916.
87. Fourth annual international egg-laying contest. By W. F. Kirkpatrick and L. E. Card. Sept., 1916.
88. Bacillary white diarrhea of young chicks: VI. Second progress report on the elimination of infected breeding stock. By L. F. Rettger, W. F. Kirkpatrick, and R. E. Jones. Oct., 1916.
89. Fifth annual international egg-laying contest. By W. F. Kirkpatrick and L. E. Card. Feb., 1917.
90. Selecting rations for dairy cows. By G. C. White and K. B. Musser. Feb., 1917.
91. A study of egg production in the white Leghorns: Records of five laying contests. By L. E. Card. June, 1917.
92. Pigmentation and other criteria for the selection of laying hens. By A. F. Blakeslee, J. A. Harris, D. E. Warner, and W. F. Kirkpatrick. Dec., 1917.
93. Infectious abortion in cattle, I. By L. F. Rettger and G. C. White. Jan., 1918.
94. Variations in the fat, solids-not-fat, and total solids in cow's milk. By G. C. White and H. F. Judkins. Jan., 1918.
95. Factors in incubation, [I]. By G. H. Lamson, jr., and W. F. Kirkpatrick. Feb., 1918.
96. Rearing chickens: Normal rate of growth in white Leghorns and Rhode Island Reds: chick rearing methods employed at the Storrs Agricultural Experiment Station. By L. E. Card and W. F. Kirkpatrick. June, 1918.
97. Cattle lice and their control. By G. H. Lamson, jr. Nov., 1918.
98. Report for three years of the educational scoring of Connecticut dairy products. By H. F. Judkins. Jan., 1918.
99. Studies in processing milk. By H. F. Judkins and P. A. Downs. Aug., 1918.
100. Egg laying contests: I, Sixth annual international egg laying contests: II, Report of the seventh competition and some five-year averages. By L. E. Card and W. F. Kirkpatrick. Jan., 1919.
101. Bacillary white diarrhea of young chicks: VII. Ovarian infection of the adult fowl and transmission of the disease through the oviduct. By L. F. Rettger, W. F. Kirkpatrick, and L. E. Card. Jan., 1919.
102. Experiments in calf feeding: Corn silage: whole milk dilutions. By G. C. White and J. A. Kuelling. May, 1919.
103. Infectious abortion in cattle: II, Specific measures of control and ultimate eradication. By G. C. White and L. F. Rettger. Sept., 1919.
104. The use of fermented milk and milk diets to control intestinal putrefaction. By R. C. Fisher. Sept., 1919.
105. Factors in incubation, II. By G. H. Lamson and L. E. Card. Aug., 1920.
106. Fertilizers for potatoes. By W. L. Slate, jr., and B. A. Brown. Sept., 1920.

INDEXES.

Index for reports No. 1-5. (In Fifth annual report, 1892, p. 194-200.)
Index for reports No. 1-10. (In Tenth annual report, 1897, p. 257-276.)

DELAWARE.

The Delaware College Agricultural Experiment Station, Newark.

BULLETINS.

1. Objects and organization. By A. N. Raub. June, 1888.
2. Horticulture and entomology. By M. H. Beckwith. Sept., 1888.
3. The department of botany and plant pathology. By F. D. Chester. Dec., 1888.
4. Injurious insects, their identification and extermination. By M. H. Beckwith. May, 1889.
5. The inspection of seed and of stock feed in Delaware. By A. T. Neale.—Seed testing. By F. D. Chester. June, 1889.
6. A summary of the station's experiments on the black rot of grapes. By A. T. Neale.—The black rot of the vine controlled by the Bordeaux mixture: a botanical description of the black rot of the grape. By F. D. Chester.—Notes on the black rot of grapes. By M. H. Beckwith. Oct., 1889.
7. Stock feeding. By C. L. Penny and A. T. Neale. Dec., 1889.
8. The possibilities of developing a domestic sugar industry: the value of sulphide of potassium as a remedy against pear scab: London purple as a remedy against the codling moth. By M. H. Beckwith. Mar., 1890.
9. Creamery studies of methods and machinery. By A. T. Neale.—Creameries as a business. By C. L. Penny. 1890.
10. [Introduction.] By A. T. Neale.—Diseases of the vine controlled by several different salts of copper. By F. D. Chester. Oct., 1890.
11. Soil and crop tests. By A. T. Neale. Jan., 1891.
12. [Introduction.] By A. T. Neale.—Injurious insects and insecticides: spraying machinery. By M. H. Beckwith. Mar., 1891.
13. [Introduction.] By A. T. Neale.—The leaf blight of the pear and the quince. By F. D. Chester. [illegible] 1891.

11. Field tests upon Indian corn. By A. T. Neale.—Notes on corn crumbling. M. H. Beckwith. Dec., 1891.
15. Diseases of crops and their treatment. By F. D. Chester. Jan., 1892.
16. Scarlet clover. By A. T. Neale. Mar., 1892.
17. Hand-power cream separators. By C. L. Penny. June, 1892.
18. Strawberries: I. Test varieties: II. a strawberry weevil. By M. H. Beckwith. Sept., 1892.
19. Can peach rot be controlled by spraying. By F. D. Chester. Dec., 1892.
20. Anthrax: Precautions necessary to prevent its spread. By A. T. Neale. 1893.
21. Insects injurious to stored grain. By M. H. Beckwith. Sept., 1893.
22. The preparation of ammoniacal solution of copper carbonate. By C. L. Penny. Dec., 1893.
23. Texas fever. By A. T. Neale. Dec., 1893.
24. Strawberries. Test of varieties. By M. H. Beckwith. July, 1894.
25. The San José scale in Delaware. By M. H. Beckwith. May, 1895.
26. Abstract from annual report 1894. Mar., 1895.
27. Tests of sorghum varieties. By C. L. Penny. June, 1895.
28. Strawberries: Test of varieties: varieties grown in Delaware: injury from leaf blight and strawberry weevil. By M. H. Beckwith. July, 1895.
29. Experiments in the treatment of peach rot and of apple scab. By F. D. Chester. Oct., 1895.
30. The San José scale insect: present status of the San José scale in Delaware: status of the insect in the United States. By M. H. Beckwith. Jan., 1896.
31. Milk sampling. By C. L. Penny. 1896.
32. Combating anthrax in Delaware. By A. T. Neale. 1896.
33. The increase of the San José scale in Delaware during 1896. By G. H. Powell. 1896.
34. The treatment of plant diseases in 1896. By F. D. Chester. Jan., 1897.
35. The cherry in Delaware. By G. H. Powell. 1897.
36. Potash: Its commercial relations: its agricultural relations: chemical method for its accurate estimation in soil. By C. L. Penny. 1897.
37. Anthrax: A study of national and of State legislation on the subject. By A. T. Neale. 1898.
38. Some principles in Delaware apple culture. By G. H. Powell. 1898.
39. Sorghum: Its development as a commercial source of sugar. By C. L. Penny. 1898.
40. Soil bacteria in their relation to agriculture. Part I. By F. D. Chester. 1898.
41. Pea canning in Delaware. By G. H. Powell. 1898.
42. The European and Japanese chestnuts in the eastern United States. By G. H. Powell. Dec., 1898. Also abridged edition.
43. Veterinary studies; State and municipal milk legislation; the use of basic slag as a fertilizer in hay farming. By A. T. Neale. 1899.
44. Sorghum in 1898. By C. L. Penny. Mar., 1899.
45. The pruning of young fruit trees. By G. H. Powell. Oct., 1899.
46. The southern cow pea in Delaware. Field work and feeding experiments. By A. T. Neale.—Plot work, botanical notes, and chemical testing. By W. H. Beaver. May, 1900.
47. Common diseases of the fowls, their control and treatment. By F. D. Chester. Sept., 1900.
48. Top-working apple trees. By G. H. Powell. Oct., 1900.
49. The strawberry root louse: the destructive pea louse in Delaware. By E. D. Sanderson. Dec., 1900.
50. Directions for treatment of insect pests and plant diseases. By E. D. Sanderson and F. D. Chester. Mar., 1901.
51. Pedigreed sorghum as a source of cane sugar. By A. T. Neale. Jan., 1901.
52. Pear blight and pear canker. By F. D. Chester. Apr., 1901.
53. Three orchard pests: The apple-bud borer; the fruit-tree bark borer; the periodical cicada. By E. D. Sanderson. Dec., 1901.
54. The Chinese cling group of peaches. By G. H. Powell. Mar., 1902.
55. Alfalfa, cowpeas, and crimson clover as factors in reducing feed bills: a critical study of Getty's method of raising cowpeas for silage purposes. By A. T. Neale. May, 1902.
56. Some destructive caterpillars: The fall web-worm; the white-marked tussock moth; the apple-tree tent caterpillar. By E. D. Sanderson. June, 1902.
57. Sundry notes on plant diseases. By F. D. Chester. June, 1902.
58. The San José scale. By E. D. Sanderson. Feb., 1903.
59. The codling moth. By E. D. Sanderson. Feb., 1903.
60. Cover crops as green manure. By C. L. Penny. Aug., 1903.
61. Orchard cover crops in Delaware. By C. P. Close. June, 1903.
62. Pruning the peach. By C. P. Close. Feb., 1904.
63. Notes on fungous diseases in Delaware. By F. D. Chester and C. O. Smith. Feb., 1904.
64. Some experience with the lime, sulphur, and salt washes: two common scale insects. By C. O. Houghton. Mar., 1904.
65. The bacteriological analysis of soils. By F. D. Chester. Mar., 1904.
66. Soil bacteria and nitrogen assimilation. By F. D. Chester. Nov., 1904.
67. The growth of crimson clover (*Trifolium incarnatum*). By C. L. Penny. Jan. 1905. Abridged edition. Jan., 1905.
68. The new K-L mixture and San José scale. By C. P. Close. Feb., 1905.
69. I. Dust spraying in Delaware; II. top grafting nursery apple trees. By C. P. Close. Mar., 1905.
70. The study of the diseases of some truck crops in Delaware. By C. O. Smith. Mar., 1905.
71. The action of formaldehyde in the preservation of milk. By F. D. Chester and T. R. Brown. Aug., 1905.
72. Dust and liquid spraying. By C. P. Close. Jan., 1906.
73. The K-L emulsions and spraying. By C. P. Close. Feb., 1906.
74. Some experiences with insecticides for the San José scale. By C. O. Houghton. Mar. 1906.
75. Petroleum emulsion. By C. L. Penny. Jan., 1906.
76. Third report on dust and liquid spraying. By C. P. Close. Dec., 1906.
77. A study of Delaware seed corn. By Harry Hayward and H. S. Jackson. Apr., 1907.
78. The effect of desiccation on root tubercle bacteria. By F. D. Chester. June, 1907.
79. Home-made miscible oils. By C. L. Penny.—Orchard tests of miscible oils. By C. O. Houghton. Aug., 1907.
80. Annual report of the director for the year ending June 30, 1907. [By Harry Hayward.] Jan., 1908.
81. Report of the agronomist for the season of 1907. [By A. E. Gramling.] Mar., 1908.
82. Report on forest conditions in Delaware and a forest policy for the State. By W. D. Sterrett. Dec., 1908.
83. Diseases of field crops in Delaware in 1907. By H. S. Jackson. Dec., 1908.
84. Annual report of the director for the year ending June 30, 1908. [By Harry Hayward.] Jan., 1909.
85. Spraying for the brown rot of the peach, 1908. By C. A. McCue. May, 1909.
86. Crimson clover. Its rate of gaining nitrogen. By C. L. Penny and Margaret B. MacDonald. Jan. 1, 1910.

87. Two important leaf miners. By C. O. Houghton. Mar. 1, 1910.
88. Annual report of the director for the fiscal year ending June 30, 1909. By Harry Hayward. Apr. 15, 1910.
89. Crimson clover culture. By A. E. Grantham. June 15, 1910.
90. Anthrax. By C. F. Dawson. Dec. 1, 1910.
91. The relation of parasitic fungi to the contents of the cells of the host plants: I. The toxicity of tannin. By M. T. Cook and J. J. Taubenhaus. Feb. 1, 1911.
92. Annual report of the director for the fiscal year ending June 30, 1910. By Harry Hayward. Mar. 15, 1911.
93. The double blossom of the dewberry (*Fusarium rubi* Winter). By M. T. Cook. Apr. 1, 1911.
94. Annual report of the director for the fiscal year ending June 30, 1911. By Harry Hayward. Mar. 20, 1912.
95. Top dressing grass lands: the sowing of red clover. By A. E. Grantham. Apr. 1, 1921.
96. Soy beans. By A. E. Grantham. May 1, 1912.
97. The relation of parasitic fungi to the contents of the cells of the host plants: II. The toxicity of vegetable acids and oxidizing enzym. By M. T. Cook and J. J. Taubenhaus. July, 1912.
97. [i. e. 98]. Plant protection. By C. A. McCue. June 15, 1912.
98. [i. e. 99]. Soy bean oil. By Firman Thompson and H. H. Morgan. Dec. 1, 1912.
100. Annual report of the director for the fiscal year ending June 30, 1912. By Harry Hayward. May, 1913.
101. Tomatoes for the canning factory. By C. A. McCue and W. C. Pelton. May 20, 1913.
102. Fruit juices. By Firman Thompson and A. C. Whittier. May 1, 1913.
103. Annual report of the director for the fiscal year ending June 30, 1913. By Harry Hayward. May 15, 1914.
104. Lime and its uses on land: Part I, Forms of lime. By Firman Thompson.—Part II, The use of lime. By A. E. Grantham. June, 1914.
105. The composition of lime-sulfur solutions. By Firman Thompson and A. C. Whittier. June, 1914.
106. The diseases of the sweet pea. By J. J. Taubenhaus. Nov., 1914.
107. Annual report of the director for the fiscal year ending June 30, 1914. By Harry Hayward. Jan., 1915.
108. Some new bacterial diseases of legumes and the relationship of the organisms causing the same. By T. F. Manns. Apr., 1915.
109. The diseases of the sweet potato and their control. By J. J. Taubenhaus and T. F. Manns. May, 1915.
110. Alfalfa in Delaware. By A. E. Grantham. June, 1915.
111. Annual report of the director for the fiscal year ending June 30, 1915. By Harry Hayward. Feb. 1, 1916.
112. A study of soy bean hay. By A. C. Whittier. May, 1916.
113. Financial statement of the experiment station peach orchard. By C. A. McCue. June, 1916.
114. The sweet potato "soil rot" or "pox," a slime mold disease. By J. A. Elliott. Nov., 1916.
115. A preliminary report on muck humus as a fertilizer and carrier of beneficial soil bacteria. By T. F. Manns and J. N. Goheen. Dec., 1916.
116. Annual report of the director for the fiscal year ending June 30, 1916. [By Harry Hayward.] Feb., 1917.
117. The tillering of winter wheat. By A. E. Grantham. Mar., 1917.
118. The relation of size of dairy to economy of milk production. By J. A. Hopkins, jr. Jan., 1918.
119. Annual report of the director for the fiscal year ending June 30, 1917. By Harry Hayward. Feb. 1, 1918.
120. Cover crops in the peach orchard. By C. A. McCue. Aug. 1, 1918.
121. Wheat investigations: Varieties. By A. E. Grantham. May 1, 1918.
122. Annual report of the director of the fiscal year ending June 30, 1918. [By Harry Hayward.] Nov. 1, 1918.
123. Inbreeding animals: I, Experimental evidence; II, Experimental results. By F. A. Hays. Aug. 1, 1919.
124. Swine production in Delaware. By F. A. Hays. Sept. 1, 1919.
125. Annual report of the director for the fiscal year ending June 30, 1919. [By Harry Hayward.] Dec. 1, 1919.
126. Annual report of the director for the fiscal year ending June 30, 1920. By C. A. McCue. Dec. 1, 1920.

SPECIAL BULLETINS.

A. Fungicides. By F. D. Chester. Mar., 1890.
B. Spray calendar. Apr., 1895.

FLORIDA.

Agricultural Experiment Station of Florida, Gainesville.

BULLETINS.

1. [Report of experiments made by the agricultural section, gardening section, horticultural section. By J. N. Whitner and J. Kost.] Apr., 1888.
2. [Report of experiments made by the several sections]. May–June, 1888.
3. Experiments with fertilizers; grasses; corn. Sept., 1888.
4. Peach growing in Florida. By J. C. Neal.—Annual report, 1888. By J. P. DePass. Jan., 1889.
5. Analysis of fertilizers. By J. M. Pickell and J. J. Earle. Apr., 1889.
6. Introduction. By J. P. DePass.—*Trifolium incarnatum*; Texas blue grass (*Poa arachnifera*). By J. C. Neal.—Department of chemistry. By J. M. Pickell and J. J. Earle. July, 1889.
7. Corn experiment; cucumbers; constituents of muck. By J. M. Pickell.—General characteristics of muck. By J. J. Earle.—Muck composting; compost making. By J. C. Neal. Oct., 1889.
8. Cotton experiment with long or black seed cotton; weeds of Florida. By J. C. Neal.—Annual report, 1889. By J. P. DePass. Jan., 1890.
9. Entomological notes. By J. C. Neal. Apr., 1890.
10. Annual report of the director, 1890.—Phosphate. By J. M. Pickell. July, 1890.
11. Experiments in corn and Irish potatoes; analysis of some Florida weeds and grasses. By J. M. Pickell. Oct., 1890.
12. Tobacco. By H. J. Fenton.—Long or black seed cotton; foreign cotton; rice; sorghum. By J. P. DePass.—Ashes as a fertilizer. By J. M. Pickell.—Ash of pine straw. By J. J. Earle and J. P. DePass. Jan., 1891.
13. General information. By J. P. DePass.—Irish potatoes; rye.—Soft marl phosphate as fertilizer; comparative value of raw finely powdered phosphate and of superphosphate as a fertilizer; a superphosphate from a low grade rock containing much alumina; muck. By J. M. Pickell and J. J. Earle. Apr., 1891.
14. Annual report, 1891. By J. P. DePass. July, 1891.

15. Tobacco and its cultivation. By J. P. DePass. Oct., 1891.
16. Corn, hay, weevil, rice, cane, Texas blue grass, and cotton. By J. P. DePass. Jan., 1892.
17. Analyses of the orange. By J. M. Pickell and J. J. Earle.—The horn fly. By P. H. Rolfs.—Questions concerning stock diseases. [Apr.], 1892.
18. Grasses; forage plants; tomato blight. By P. H. Rolfs. [July], 1892.
19. Tobacco. By J. P. DePass. Oct., 1892.
20. Soils and fertilizers. By A. A. Persons. Sept., 1893.
21. The tomato and some of its diseases. By P. H. Rolfs. Oct., 1893. See 47.
22. Fertilizers: How to make and how to use them. By A. A. Persons. Nov., 1893.
23. Insecticides and fungicides. By P. H. Rolfs. Dec., 1893.
24. Annual report, 1893. By Oscar Clute. Jan., 1894.
25. Leeches or leeching. By A. W. Bitting. Sept., 1894.
26. Big head. By A. W. Bitting. Oct., 1894.
27. Notes on experiments with the pineapple. By L. C. Washburn. Nov., 1894.
28. Liver fluke; southern cattle fever. By A. W. Bitting. Dec., 1894.
29. The San José scale. By P. H. Rolfs. Aug., 1895.
30. The culture of tobacco. By F. B. Moodie. Nov., 1895. See 38.
31. Some market vegetables for Florida. By P. H. Rolfs. Dec., 1895.
32. Cotton, its cultivation and fertilization. By A. A. Persons. Jan., 1896.
33. Present condition and treatment of orange groves. By M. S. Moreman. Feb., 1896.
34. Insect enemies of truck and garden crops. By A. L. Quaintance. Mar., 1896. See 134.
35. Cassava, the velvet bean, prickly comfrey, taro, Chinese yam, cañaigre, alfalfa, flat pea, sachaline. By Oscar Clute. Apr., 1896.
36. Insects injurious to stored grain and cereal products. By A. L. Quaintance. Oct., 1896.
37. The pineapple at Myers. By Oscar Clute and W. A. Marsh. Nov., 1896.
38. Tobacco in Florida. By F. B. Moodie. Jan., 1897. A revision of 30, with additions.
39. Strawberry culture for the market and the home. By S. Powers [and C. H. Ward]. July, 1897.
40. The fall army worm; southern grass worm (*Laphygma frugiperda* Smith and Abbott). By A. L. Quaintance. July, 1897.
41. A fungus disease of the San José scale (*Sphaerostilbe coccophila* Tul.). By P. H. Rolfs. Aug., 1897.
42. Some strawberry insects. By A. L. Quaintance. Aug., 1897.
43. A chemical study of some typical soils of the Florida peninsula. By A. A. Persons. Sept., 1897.
44. Cane; sirup; sugar. By H. E. Stockbridge. Jan., 1898. See 118.
45. Three injurious insects: Bean leaf roller, corn delphax, canna leaf roller. By A. L. Quaintance. Mar., 1898.
46. The strawberry thrips and the onion thrips. By A. L. Quaintance. July, 1898.
47. Diseases of the tomato. By P. H. Rolfs. Sept., 1898. See 91.
48. A preliminary report upon the insect enemies of tobacco in Florida. By A. L. Quaintance. Oct., 1898.
49. Cassava as a money crop. By H. E. Stockbridge. Mar., 1899.
50. Pineapple fertilizers. By P. H. Rolfs. May, 1899.
51. Some common Florida scales. By H. A. Gossard. Jan., 1900.
52. Baking powders. By H. K. Miller. Feb., 1900.
53. Some citrus troubles. By H. H. Hume. Mar., 1900.
54. Pecan culture. By H. H. Hume. Aug., 1900.
55. Feeding with Florida feed stuffs. By H. E. Stockbridge. Sept., 1900.
56. The cottony cushion scale. By H. A. Gossard. May, 1901.
57. Top working pecans. By H. H. Hume. June, 1901.
58. Pomelos. By H. H. Hume. June, 1901.
59. Cauliflower. By H. H. Hume. Oct., 1901.
60. Velvet bean. By H. K. Miller. Jan., 1902. See 102.
61. Two peach scales. By H. A. Gossard. July, 1902.
62. The Peen-to peach group. By H. H. Hume. July, 1902.
63. Diagrams for packing citrus fruits. By H. H. Hume. Sept., 1902.
64. Texas cattle fever and salt-sick. By C. F. Dawson. Oct., 1902.
65. The kumquats. By H. H. Hume. Dec., 1902.
66. The mandarin orange group. By H. H. Hume. Feb., 1903.
67. White fly (*Aleyrodes citri*). By H. A. Gossard. June, 1903.
68. Pineapple culture: I, Soils. By H. K. Miller and H. H. Hume. June, 1903.
69. Cultivation of citrus groves. By H. H. Hume. Jan., 1904.
70. Pineapple culture: II, Varieties. By H. H. Hume and H. K. Miller. Feb., 1904.
71. Japanese persimmons. By H. H. Hume and F. C. Reimer. Mar., 1904.
72. Feeding horses and mules on home-grown feed stuffs. By C. M. Conner. June, 1904.
73. The honey peach group. By F. C. Reimer. July, 1904.
74. Anthracnose of the pomelo. By H. H. Hume. Aug., 1904.
75. Potato diseases. By H. H. Hume. Aug., 1904.
76. Insecticides. By H. A. Gossard.—Fungous diseases and their control. By H. H. Hume. Nov., 1904.
77. Equine glanders and its eradication. By C. F. Dawson. Feb., 1905.
78. Forage crops; the silo. By C. M. Conner. Mar., 1905.
79. Insects of the pecan. By H. A. Gossard. Apr., 1905. See 147.
80. The composition of some of the concentrated feeding stuffs on sale in Florida. By A. W. Blair. Apr., 1905.
81. Fertilizer suggestions. By E. R. Flint. Aug., 1905.
82. A preliminary report on growing Irish potatoes. By C. M. Conner. Dec., 1905.
83. Pineapple culture: III, Fertilizer experiments. By H. K. Miller and A. W. Blair. Feb., 1906.
84. Pineapple culture: IV, Handling the crop. By H. H. Hume. Mar., 1906.
85. Second report on pecan culture. By H. H. Hume. Mar., 1906.
86. Salt-sick (bovine uncinariasis). By C. F. Dawson. Sept., 1906.
87. Soil studies: I, Preliminary report. By A. W. Blair. Dec., 1906.
88. White fly conditions in 1906: The use of the fungi. By E. W. Berger. Jan., 1907.
89. Occurrence and use of artesian and other underground water. By E. H. Sellards. Mar., 1907.
90. Pig feeding with cassava and sweet potatoes. By C. M. Conner. Sept., 1907.
91. Tomato diseases. By P. H. Rolfs. Dec., 1907. A revision of 21 and 47. See 146.
92. Sorghum for silage and forage. By J. M. Scott. Mar., 1908.
93. Soil studies: II, Acid soils. By A. W. Blair and E. J. Macey. May, 1908.
94. Fungus diseases of scale insects and white fly. By P. H. Rolfs and H. S. Fawcett. See 119.
95. Dwarf Essex rape for winter forage. By J. M. Scott. Aug., 1908.
96. Steer-feeding. By J. M. Scott. Jan., 1909.
97. White fly studies in 1908. By E. W. Berger. Feb., 1909.
98. Scaly bark of citrus, a preliminary report. By H. S. Fawcett. Mar., 1909.
99. Milk production. By J. M. Scott. July, 1909.

100. Corn. By P. H. Rolfs. Dec., 1909.
101. Pineapple culture: VI. The effect of fertilizers upon the quality of the fruit. By A. W. Blair and R. N. Wilson. Jan., 1910.
102. The velvet bean. By J. M. Scott. Apr., 1910. A summary of 60, with additions.
103. Whitefly control. By E. W. Berger. Sept., 1910.
104. Pineapple culture: VII, Nitrates in the soil. By A. W. Blair and R. N. Wilson. Oct., 1910.
105. Japanese cane for forage. By J. M. Scott. Feb., 1911. See 129.
106. Scaly bark or "nailhead rust" of citrus (*Cladosporium herbarum* var. *citricolum*). By H. S. Fawcett. June, 1911.
107. Stem-end rot of citrus fruits (*Phomopsis* sp.). By R. S. Fawcett. Oct., 1911.
108. Diseases of citrus fruits. By P. H. Rolfs, H. S. Fawcett, and B. F. Floyd. Nov., 1911.
109. Citrus scab. By H. S. Fawcett. May, 1912.
110. Native and grade cattle-breeding. By J. M. Scott. June, 1912.
111. Melanose and stem-end rot (*Phomopsis citri*). By B. F. Floyd and H. E. Stevens. Dec., 1912.
112. Tomato insects, root knot and "white mold." By J. R. Watson. Dec., 1912. See 125.
113. Pig-feeding. By J. M. Scott. Feb., 1913. See 131.
114. Milk production, II. By J. M. Scott. June, 1913.
115. Sugar and acid in oranges and grapefruit. By S. E. Collison. July, 1913.
116. Lettuce drop. By O. F. Burger. Oct., 1913.
117. Tomato diseases. By P. H. Rolfs. Nov., 1913. See 146.
118. Sugar-cane and sirup making. By A. P. Spencer. Nov., 1913. Supersedes 44.
119. Fungus diseases of scale insects and whitefly. By P. H. Rolfs and H. S. Fawcett; revised by P. H Rolfs. Nov., 1913. A revision of 94.
120. Irish potatoes in Florida. By A. P. Spencer. Jan., 1914. See 133.
121. Cucumber rot. By O. F. Burger. Feb., 1914.
122. Citrus canker, a preliminary bulletin. By H. E. Stevens. Mar., 1914.
123. Whitefly control, 1914. By J. R. Watson. Sept., 1914.
124. Citrus canker, II: History of citrus canker. By E. W. Berger.—Studies of citrus canker. By H. E, Stevens.—Eradication of citrus canker. By Frank Stirling. Oct., 1914.
125. Tomato insects, root knot and "white mold." By J. R. Watson. Dec., 1914. A revision of 112.
126. The wooly white fly (*Aleurothrixus howardi* Quaintance). By J. R. Watson. Mar., 1915.
127. Mangoes in Florida. By P. H. Rolfs. June, 1915.
128. Citrus canker, III. By H. E. Stevens. Nov., 1915.
129. Japanese cane. By J. M. Scott. Jan., 1916. A revision of 105. See 144.
130. Control of the velvet bean caterpillar. By J. R. Watson. June, 1916.
131. Pig feeding. By J. M. Scott. June, 1916. Supplements 131. See 141.
132. Loss of fertilizers by leaching. By S. E. Collison and S. S. Walker. Nov., 1916.
133. Irish potatoes in Florida. By A. P. Spencer. Feb., 1917. A revision of 120.
134. Florida truck and garden insects. By J. R. Watson. Apr., 1917. Supersedes 34. See 151.
135. The utilization of cull citrus fruits in Florida, summarized by S. S. Walker from the original monograph by F. A. McDermott. Apr., 1917.
136. Control of root-knot by calcium cyanamide and other means. By J. R. Watson. Apr., 1917.
137. Some cases of injury to citrus trees apparently induced by ground limestone. By B. F. Floyd. June, 1917.
138. Rhodes grass. By P. H. Rolfs. June, 1917.
139. Some important diseases of truck crops in Florida. By C. D. Sherbakoff. June, 1917.
140. Dieback, or exanthema of citrus trees. By B. F. Floyd. Aug., 1917.
141. Pork production in Florida. By J. M. Scott. Nov., 1917. A revision of 113 and 131.
142. Dairying in Florida. By J. M. Scott. Jan., 1918.
143. Feeding for milk production. By J. M. Scott. Feb., 1918.
144. Fertilizers for Japanese cane. By J. M. Scott. Feb., 1918. Supplements 129.
145. Melanose, II. By H. E. Stevens. Feb., 1918.
146. Tomato diseases. By C. D. Sherbakoff. Mar., 1918. A revision of 117. Supersedes 91.
147. Diseases and insect pests of the pecan. By Julius Matz. May, 1918. Supersedes 79.
148. Insects of a citrus grove. By J. R. Watson. June, 1918.
149. Some diseases of the fig. By Julius Matz. Aug., 1918.
150. Florida citrus diseases. By H. E. Stevens. Aug., 1918.
151. Florida truck and garden insects. By J. R. Watson. Feb., 1919. A revision of 134.
152. Velvet bean varieties. By J. M. Scott. Feb., 1919.
153. Napier and Merker grasses, two new forage crops for Florida. By J. B. Thompson. Feb., 1919.
154. Citrus fertilizer experiments. By S. E. Collison. Dec., 1919.
155. Prussic acid in sorghum. By S. E. Collison. Dec., 1919.
156. Sweet potato fertilizer experiment. By J. M. Scott. Apr., 1920.
157. Soft pork studies. Preliminary report. By J. M. Scott. Apr., 1920.
158. Fertilizing the Irish potato crop. By B. F. Floyd and R. W. Ruprecht. Nov., 1920.

GEORGIA.

Georgia Agricultural Experiment Station, Experiment.

BULLETINS.

1. Announcement; histroy; [text of the Hatch act]. By W. L. Jones. Oct., 1888.
2. Factors in agricultural investigations. By W. L. Jones.—Ash analyses of native woods. By H. C. White.—Origin of soils geologically considered. By J. W. Spencer.—The imported cabbage butter fly (*Pieris rapæ*, L.). By J. P. Campbell.—Experiments with phosphates and kainit applied to cotton; summary of meteorological observations; preservation of the sweet potato in winter. By W. L. Jones. Jan., 1889.
3. Entomology. By J. P. Campbell.—Additional ash analyses of native woods. By H. C. White.—Cowpea as a fertilizing crop; preservation of the sweet potato in winter. By W. L. Jones. Apr., 1889.
4. Analyses of cattle foods. By C. M. Strahan. July, 1889.
5. Georgia experiment station: History; description and outline. By R. J. Redding. Oct., 1889.
6. Georgia experiment station. By R. J. Redding.—Department of entomology. By J. P. Campbell.—Department of geology: "Southern drift" and its agricultural relations. By J. W. Spencer. Jan., 1890.
7. Analyses of food [i. e. feeding] stuffs. By H. C. White.—Meteorology. By L. H. Charbonnier.—Destructive leaf-hopper. By J. P. Campbell. Apr., 1890.
8. Irish potato culture. By Gustave Speth. July, 1890.

9. Potash and paying crops, [compiled by A. de Ghequier]. Oct., 1890.
   Identical with West Virginia Sta. Special Bul. [1]: Tennessee Sta. Special Bul. D; Maryland Sta. Special Bul. B.
10. Fertilizer experminets on corn; culture experiments on corn; variety tests of corn. By R. J. Redding. Dec., 1890.
11. Fertilizer experiments, culture experiments and variety tests in: Cotton. [By R. J. Redding.]—Sweet potatoes, field peas, garden vegetables, etc. By Gustave Speth. Jan., 1891.
12. Field experiments in forage plants with analyses of the products. [By Gustave Speth.] Apr., 1891.
12½. Circular to the farmers of Georgia from the board of directors. By R. J. Redding. July, 1891.
13. I, Analyses of feeding stuffs. By H. C. White.—II, Forage plants. By Gustave Speth. July, 1891.
14. I, Variety and fertilizer experiments with oats; II, variety tests with wheat. By R. J. Redding. III, Variety tests and fertilizer experiments with vegetables. By Gustave Speth. Oct., 1891.
15. I, Fertilizer experiments on corn; culture experiments on corn; variety tests of corn. [By R. J. Redding.]—II, Culture of small fruits. By Gustave Speth. Dec., 1891.
16. Fertilizer experiments on cotton; culture experiments on cotton; variety tests of cotton. [By R. J. Redding.] Feb., 1892.
16½. Announcement regarding station publications. Mar., 1892.
17. Irish potatoes; sweet potatoes; tomatoes; forage plants. By Gustave Speth. Mar., 1892.
17½. The air and the soil in their relations to agriculture. By H. C. White. July, 1892.
18. Cheese and butter dairying. [By R. J. Redding.] Oct., 1892.
19. Culture of tobacco. [By R. J. Redding.] Dec., 1892.
20. Fertilizer, culture, and variety experiments: Corn and cotton. [By R. J. Redding.] Feb., 1893.
21. I, Practical dairying; dehorning cattle; feed formulas; II, experiments with oats. [By R. J. Redding.] Aug., 1893.
22. Manures and fertilizers. By H. C. White. Oct., 1893.
23. Manures and fertilizers: I, Fertilizer, culture, and variety experiments on corn. [By R. J. Redding.]—II, Fertilizer and variety tests on field peas. By H. N. Starnes. Dec., 1893.
24. Variety, fertilizer, and culture experiments on cotton. By R. J. Redding.—Cotton crosses and hybrids. By H. N. Starnes. Feb., 1894.
25. Sweet potatoes. By H. N. Starnes. Nov., 1894.
26. Cowpeas: Fertilizer and variety tests. By H. N. Starnes. Dec., 1894.
27. I, Fertilizer, culture, and variety experiments on corn; II, fertilizer and variety tests on cotton; III green manuring with cowpeas. By R. J. Redding. Dec., 1894.
28. Grape culture. By H. N. Starnes. Sept., 1895.
29. Irish potatoes. By H. N. Starnes. Oct., 1895.
30. Corn culture; oat culture. By R. J. Redding. Nov., 1895.
31. Cotton culture. By R. J. Redding. Dec., 1895.
32. Strawberries. By H. N. Starnes. Sept., 1896.
33. The cultivated blackberries and dewberries. By H. N. Starnes. Oct., 1896.
34. Corn culture. By R. J. Redding. Nov., 1896.
35. Cotton culture. By R. J. Redding. Dec., 1896.
36. The San José and other scales in Georgia. By H. N. Starnes. Oct., 1897.
37. Corn culture. By R. J. Redding. Nov., 1897.
38. Watermelons. By H. N. Starnes. Dec., 1897.
39. Cotton culture; fertilizer formulas. By R. J. Redding. Dec., 1897.
40. The Stringfellow root pruning theory. By H. N. Starnes. Sept., 1898.
41. Corn culture: Fertilizer, variety, and culture tests. By R. J. Redding. Oct., 1898.
42. Some peach notes. By H. N. Starnes. Nov., 1898.
43. Fertilizer, culture, and variety experiments on cotton. By R. J. Redding. Dec., 1898.
44. Wheat and oats, rye and barley. By R. J. Redding. Sept., 1899.
45. Some important insect enemies of cucurbits. By A. L. Quaintance. Oct., 1899.
46. Corn culture. By R. J. Redding. Nov., 1899.
47. Fertilizer, culture, and variety experiments on cotton. By R. J. Redding. Dec., 1899.
48. Strawberry notes for 1899. By A. L. Quaintance. Jan., 1900.
49. Practical dairying. By R. J. Redding and H. J. Wing. Sept., 1900.
50. The brown rot of peaches, plums, and other fruits (*Monilia fructigena* Persoon). By A. L. Quaintance. Oct., 1900.
51. Corn culture. By R. J. Redding. Nov., 1900.
52. Cotton culture. By R. J. Redding. Jan., 1901.
53. Second report on grapes. By A. L. Quaintance. June, 1901.
54. The pickle worm (*Margaronia nitidalis* Cramer). By A. L. Quaintance. July, 1901.
55. Corn culture. By R. J. Redding. Nov., 1901.
56. Cotton culture. By R. J. Redding. Jan., 1902.
57. Cantaloupe culture in Georgia. By S. H. Fulton. Aug., 1902.
58. Corn culture. By R. J. Redding. Dec., 1902.
59. Cotton culture. By R. J. Redding. Dec., 1902.
60. Common ailments of breeding cattle. By C. L. Willoughby. Mar., 1903.
61. The fig in Georgia. By H. N. Starnes. Nov., 1903.
62. Corn culture. By R. J. Redding. Dec., 1903.
63. Cotton culture. By R. J. Redding. Dec., 1903.
64. Cattle ticks and Texas fever. By C. L. Willoughby. Aug., 1904.
65. Corn culture. By R. J. Redding. Nov., 1904.
66. Cotton culture. By R. J. Redding. Dec., 1904.
67. The plum in Georgia. By H. N. Starnes. Dec., 1904.
68. Japan and hybrid plums. By H. N. Starnes. Aug., 1905.
69. Corn culture. By R. J. Redding. Nov., 1905.
70. Cotton culture. By R. J. Redding. Dec., 1905.
71. Some field notes on soil inoculation. By H. N. Starnes. Dec., 1905.
72. Fertilization. By R. J. Redding and H. N. Starnes. Mar., 1906.
73. The peach-tree borer. By H. N. Starnes. June, 1906.
74. Corn culture. By R. J. Redding and J. M. Kimbrough. Nov., 1906.
75. Cotton culture. By R. J. Redding and J. M. Kimbrough. Dec., 1906.
76. Feeding Tennessee steers in Georgia. By C. L. Willoughby and P. N. Flint. June, 1907.
77. The fig in Georgia. (Second report). By H. N. Starnes and J. F. Monroe. Nov., 1907.
78. Corn culture. By M. V. Calvin and J. M. Kimbrough. Nov., 1907.
79. Cotton culture. By M. V. Calvin and J. M. Kimbrough. Dec., 1907.
80. Cooperative dairy investigations by the Georgia Experiment Station and the Dairy Division, United States Department of Agriculture. By P. N. Flint and J. E. Dorman. July, 1908.
81. (Technical series No. 1.) The effect of carbonates upon nitrification. By W. L. Owen. Sept., 1908.
82. Sugar corn and tomatoes. By T. H. McHatton. Oct., 1908.

83. (Technical series No. 2.) The Mendelian and DeVriesian laws applied to cotton breeding. By R. J. H. DeLoach. Oct., 1908.
84. Corn and cotton. By J. M. Kimbrough. Dec., 1908.
85. (Technical series No. 3.) Some studies on the *Colletotrichum gossypii*. By J. H. DeLoach. July, 1909.
86. Sorghum versus corn meal as a source of carbohydrates for dairy cattle. By P. N. Flint. July, 1909.
87. Spanish peanuts, soy beans, and skim-milk as feeds supplementary to corn. By P. N. Flint. Nov., 1909.
88. Corn culture. By J. M. Kimbrough. Dec., 1909.
89. Cotton culture. By J. M. Kimbrough. Dec., 1909.
90. Protein requirements of growing cattle under one year of age. By P.N. Flint. July, 1910.
91. Cabbage culture. By H. P. Stuckey. Sept., 1910.
92. The cotton red spider. By E. L. Worsham. Nov., 1910.
93. Corn production. By M. V. Calvin. Nov., 1910.
94. Cotton production. By M. V. Calvin. Dec., 1910.
95. The influence of stall manure upon the bacterial flora of the soil. By J. C. Temple. Sept., 1911.
96. Tomatoes: I, Varieties, culture, and canning; II, blossom-end rot. By H. P. Stuckey and J. C. Temple Nov., 1911. See 112.
97. Corn culture. By J. M. Kimbrough. Nov., 1911.
98. Cotton culture. By J. M. Kimbrough. Dec., 1911.
99. Mendelian inheritance in cotton hybrids. By C. A. McLendon. Aug., 1912.
100. Cotton culture. By J. M. Kimbrough. Dec., 1912.
101. The mole cricket. By E. L. Worsham and W. V. Reed. Dec., 1912.
102. Poultry notes. By A. F. Rolf. Dec., 1912.
103. Nitrification in acid or nonbasic soils. By J. C. Temple. Jan., 1914.
104. Corn culture. By J. M. Kimbrough. Jan., 1914.
105. On cotton cultivation. By J. M. Kimbrough and R. J. H. DeLoach. Jan., 1914.
106. Vegetable gardening. By H. P. Stuckey.—Combating insect pests and fungus diseases of garden plants. By B. B. Higgins and H. P. Stuckey. Feb., 1914.
107. Sweet potatoes, culture, storing and studies in fertilizing. By H. P. Stuckey. Mar., 1914.
108. The feeding of cotton. By H. C. White. April, 1914.
109. Digestion and metabolism of a steer when placed on a continuous ration of corn silage. By P. V. Ewing and C. A. Wells. Dec., 1914.
110. Silos and silage. By P. V. Ewing. Dec., 1914.
111. Dehorning cattle. By P. V. Ewing. Dec., 1914.
112. Tomatoes. By H. P. Stuckey. Jan., 1915. A revision of 96.
113. Variety work with corn and cotton. By C. K. McClelland. Jan., 1915.
114. The feeding of cotton, II. By H. C. White. July, 1915.
115. The associative digestibility of corn silage, cottonseed meal and starch in steer rations. By P. V. Ewing and C. A. Wells. July, 1915.
116. Pecans: Varieties, influences of climate, soil and stock on cion. By H. P. Stuckey. Aug., 1915.
117. Winter crops: Wheat, oats, rye, barley, speltz, vetch, burr clover, crimson clover. By C. K. McClelland. Aug., 1915.
118. Plum wilt, its nature and cause. By B. B. Higgins. Jan., 1916.
119. Acidosis and cottonseed meal injury. By C. A. Wells and P. V. Ewing. Mar. 20, 1916.
120. Studies of *Bacillus radicicola:* I, Testing commercial cultures; II, soil as a medium. By J. C. Temple. May, 1916.
121. Transmission of resistance and susceptibility to blossom-end rot in tomatoes. By H. P. Stuckey. June, 1916.
122. The changes in composition of butterfat produced by feeding cottonseed oil. By F. H. Smith, C. A. Wells, and P. V. Ewing. June, 1916.
123. Irish potato spraying. By H. P. Stuckey and B. B. Higgins. July, 1916.
124. The two groups of varieties of the Hicora pecan and their relation to self-sterility. By H. P. Stuckey. Oct., 1916.
125. The associative digestibility of corn silage and cottonseed meal in steer rations, Part II. By P. V. Ewing, C. A. Wells and F. H. Smith. Feb., 1917.
126. The value of ammonification tests. By J. C. Temple. Jan., 1919.
127. Gum formation with special reference to cankers and decays of woody plants. By B. B. Higgins. Jan., 1919.
128. Cotton and corn: Cultural tests, and variety tests of 1917 and 1918. By C. K. McClelland. Feb., 1919.
129. The velvet bean. By C. K. McClelland. Feb., 1919.
130. The influence of certain factors on the time of opening of cotton. By T. E. Keitt and A. W. Murray. Nov., 1919.
131. A comparison of certain raw phosphates with acid phosphate for fertilizing cotton. By T. E. Keitt and A. W. Murray. Nov., 1919.
132. A new method for rendering insoluble phosphates available. By T. E. Keitt and A. W. Murray. Dec., 1919.
133. Work with *Vitis rotundifolia*, a species of muscadine grapes. By H. P. Stuckey. Dec., 1919.
134. Further studies in fertilizing and storing sweet potatoes [1914–1919]. By H. P. Stuckey. Dec., 1919.
135. Spraying peaches. By H. P. Stuckey and B. B. Higgins. Dec., 1919.
136. Cotton varieties, 1920. By T. S. Buie. Dec., 1920.
137. Cotton fertilization experiments, 1920. By F. H. Smith and T. S. Buie. Dec., 1920
138. Tomato wilt. By J. A. McClintock. Dec., 1920.

BULLETINS (TECHNICAL SERIES)

This series includes Bulletins 81, 83, and 85 of the regular series.

HAWAII.

Hawaii Agricultural Experiment Station, Honolulu.

BULLETINS.

1. Chickens and their diseases in Hawaii. By T. F. Sedgwick. 1901.
2. The root rot of taro. By T. F. Sedgwick. 1902.
3. Insecticides for use in Hawaii. By D. L. Van Dine. 1903. Revised edition, 1904.
4. The cultivation of sisal in Hawaii. By F. E. Conter. 1903.
5. A sugar-cane leafhopper in Hawaii. By D. L. Van Dine. 1904.
6. Mosquitoes in Hawaii. By D. L. Van Dine. 1904.

7. The banana in Hawaii. By J. E. Higgins. 1904.
8. Methods of milking. By F. G. Krauss. 1905.
9. Citrus fruits in Hawaii. By J. E. Higgins. 1905.
10. Insect enemies of tobacco in Hawaii. D. L. Van Dine. 1905. See 34.
11. The black wattle (*Acacia decurrens*) in Hawaii. By J. G. Smith. 1906.
12. The mango in Hawaii. By J. E. Higgins. 1906.
13. The composition of some Hawaiian feeding stuffs. By E. C. Shorey. 1906.
14. Marketing Hawaiian fruits. By J. E. Higgins. 1907.
15. Cultivation of tobacco in Hawaii. By J. G. Smith and C. R. Blacow. July, 1908.
16. The Ceara rubber tree in Hawaii. By J. G. Smith and Q. Q. Bradford. July, 1908.
17. Hawaiian honeys. By D. L. Van Dine and Alice R. Thompson. June, 1908.
18. Insects of cotton in Hawaii. By D. T. Fullaway. 1909.
19. Experiments in tapping Ceara rubber trees. By E. V. Wilcox. 1910.
20. Shield budding the mango. By J. E. Higgins. 1910.
21. A study of the composition of the rice plant. By W. P. Kelley and Alice R. Thompson. 1910.
22. Insects attacking the sweet potato in Hawaii. By D. T. Fullaway. 1911.
23. Leguminous crops for Hawaii. By F. G. Krauss. Sept. 20, 1911.
24. The assimilation of nitrogen by rice. By W. P. Kelley. June 16, 1911.
25. The avocado in Hawaii. By J. E. Higgins, C. J. Hunn, and V. S. Holt. Dec. 16, 1911.
26. The function and distribution of manganese in plants and soils. By W. P. Kelley. Apr. 8, 1912.
27. Insects injurious to corn. By D. T. Fullaway. July 11, 1912.
28. The effect of manganese on pineapple plants, and the ripening of the pineapple fruit. By E. V. Wilcox and W. P. Kelly. Sept. 10, 1912.
29. Ornamental hibiscus in Hawaii. By E. V. Wilcox and V. S. Holt. Dec., 1913.
30. The effect of heat on Hawaiian soils. By W. P. Kelley and W. T. McGeorge. Dec., 1913.
31. Rice soils of Hawaii, their fertilization and management. By W. P. Kelley. Jan., 1914.
32. The papaya in Hawaii. By J. E. Higgins and V. S. Holt. Mar., 1914.
33. The organic nitrogen of Hawaiian soils. By W. P. Kelley and Alice R. Thompson. Apr., 1914.
34. Tobacco insects in Hawaii. By D. T. Fullaway. May, 1914.
35. Absorption of fertilizer salts by Hawaiian soils. By W. T. McGeorge. Aug., 1914.
36. Grasses and forage plants of Hawaii. By C. K. McClelland. Feb., 1915.
37. Ammonification and nitrification in Hawaiian soils. By W. P. Kelley. Feb., 1915.
38. Effect of fertilizers on the physical properties of Hawaiian soils. By W. T. McGeorge. Apr., 1915.
39. The biochemical decomposition of nitrogenous substances in soils. By W. P. Kelley. Aug., 1915.
40. The soils of the Hawaiian Islands. By W. P. Kelley, W. T. McGeorge, and Alice R. Thompson. Aug., 1915.
41. Phosphate fertilizers for Hawaiian soils, and their availability. By W. T. McGeorge. Dec., 1916.
42. Composition of Hawaiian soil particles. By W. T. McGeorge. Jan., 1917.
43. Chemical studies of the efficiency of legumes as green manures in Hawaii. By Alice R. Thompson May 7, 1917.
44. The litchi in Hawaii. By J. E. Higgins. July 27, 1917
45. Potato diseases in Hawaii and their control. By C. W. Carpenter. Jan. 24, 1920.

GENERAL INDEX.

Index to publications of the Hawaii Agricultural Experiment Station July 1, 1901, to December 31, 1911. By A. T. Longley. May 24, 1912.

IDAHO.

Agricultural Experiment Station of the University of Idaho, Moscow.

BULLETINS.

1. Organization and progress of work at the experiment stations. By R. Milliken. Sept., 1892.
2. Announcement and proposed work of the stations. By R. Milliken. Dec., 1892.
3. The application of chemistry to the agricultural development of Idaho. By C. W. McCurdy. Mar., 1893.
4. Methods of preventing smut in wheat and oats: carbon bisulphide as a squirrel exterminator; a new squirrel exterminator. By C. P. Fox. July, 1893.
5. The relation of meteorology to the agricultural interests of Idaho. By J. E. Bonebright. Oct., 1893.
6. Annual report for the year 1893. By F. B. Gault and C. P. Fox. Jan., 1894.
7. Insecticides and spraying. By J. M. Aldrich. Apr., 1894.
8. Water and water analyses. By C. W. McCurdy. July, 1894.
9. I, Idaho soils: Their orgin and composition; II, miscellaneous analyses. By C. W. McCurdy. Oct., 1894.
10. Idaho agriculture, descriptive and experimental. By C. P. Fox. 1897.
11. Smuts and rusts of grains in Idaho, and the most approved methods of dealing with them. By L. F. Henderson. 1898.
12. Sugar beets in Idaho. By C. W. McCurdy. 1898.
13. Meteorology. By J. E. Bonebright. 1898.
14. Twelve of Idaho's worst weeds. By L. F. Henderson. 1898.
15. Report for fiscal year ending June 30, 1898, with financial reports for 1897–98; miscellaneous information. By F. B. Gault. July, 1898.
16. The San José scale in Idaho. By J. M. Aldrich. 1899.
17. Construction and management of hotbeds. By F. A. Huntley. 1899.
18. Sugar-beet investigation in 1898. By C. W. McCurdy and Thorn Smith. 1899.
19. Miscellaneous analyses. By C. W. McCurdy and Thorn Smith. 1899.
20. Apple scab in the Potlatch. By L. F. Henderson. 1899.
21. The codling moth. By J. M. Aldrich. Feb., 1900.
22. Onion growing. By F. A. Huntley. 1900.
23. I, Meteorological records; II, prediction of frosts. By J. E. Bonebright. Apr., 1900.
24. I, Cattle feeding; II, crop test. By H. T. French. May, 1900.
25. The composition of arsenical insecticides. By S. Avery. Jan., 1901.
26. I, Crude petroleum; II, the elm louse; III, the pear leaf blister mite. By J. M. Aldrich. Feb., 1901.
27. Mushrooms or toadstools: A natural food product. By L. F. Henderson. Mar., 1901.
28. Some Idaho soils. By H. T. Beans. Apr., 1901.
29. Report of the director for the two years ending June 30, 1900. By J. A. McLean. June, 1901.
30. The service of soils. By F. A. Huntley. Dec., 1901.
31. Some spraying experiments for 1901. By L. F. Henderson. Feb., 1902.

32. I, Steer feeding; II, feeding lambs; III, analysis of stock foods. By H. T. French. Apr., 1902.
33. Some grasses and clovers and how to grow them in Idaho. By H. T. French. May, 1902.
34. Tomato culture. By F. A. Huntley. Dec., 1902.
35. Meteorological records, soil temperatures [for 1901]. By J. E. Bonebright. Jan., 1903.
36. The codling moth. By J. M. Aldrich. Feb., 1903.
37. Some conditions of stock poisoning in Idaho. By H. B. Slade. Feb., 1903.
38. Grasses and forage plants in Idaho. By L. F. Henderson. May, 1903.
39. Some experiments with fungus diseases in 1903. [By L. F. Henderson.] Jan., 1904.
40. Winter spraying for the apple aphis. By J. M. Aldrich. Jan., 1904.
41. Grasshopper and cricket outbreaks. By J. M. Aldrich. Mar., 1904.
42. Experiments in pig feeding. By H. T. French. May, 1904.
43. Planting the apple orchard. By L. B. Judson. May, 1904. See 64.
44. Alkali and the treatment of alkali lands, Part I. By J. S. Burd. June, 1904.
45. Trap rocks of Palouse region as road material [Part I]. By C. N. Little and W. L. Zeigler. July, 1904.
46. The grape phylloxera. By J. M. Aldrich. Feb., 1905.
47. Pruning the apple orchard. By L. B. Judson. Feb., 1905.
48. Raising calves on separator milk. By H. T. French. May, 1905.
49. Soil temperatures, 1903-1904; summary of weather data, 1894-1904. By G. A. Crosthwait. May, 1905.
50. Trap rocks of Palouse region as road material. By C. N. Little and W. G. Turley. Sept., 1905.
51. Alkali and the treatment of alkali lands; Part II, alkali conditions in the Payette Valley. By J. S. Burd. Sept., 1905.
52. Potato scab. By L. F. Henderson. Jan., 1906.
53. Experiments with wheat and oats for smut. By L. F. Henderson. Jan., 1906.
54. Picking, packing and marketing the apple. By L. B. Judson. May, 1906.
55. Mixed sprays for apple scab and codling moth. By L. F. Henderson. Jan., 1907.
56. The Rex spray and other lime and sulphur compounds. By L. F. Henderson. Jan., 1907.
57. Indian corn, its production and improvement. By C. A. Crosthwait. Apr., 1907.
58. Irrigation investigations in cooperation with Department of Agriculture, Washington, D. C. By Elias Nelson. May, 1907.
59. A soil fertility test. By G. A. Crosthwait. May, 1907.
60. Conditions affecting the production of denatured alcohol in the Northwest. By J. S. Jones. Dec., 1907.
61. Spraying experiments, 1907. By L. F. Henderson. Feb., 1908.
62. Dry farming in Idaho. By Elias Nelson. Mar., 1908.
63. Babcock test for butter fat. By J. H. Frandson. June, 1908.
64. Planting apple orchards in Idaho. By J. R. Shinn. July, 1908. Supersedes 43.
65. Alaska wheat investigation. By H. T. French and J. S. Jones. Nov., 1908.
66. Alfalfa. By Elias Nelson. May, 1909.
67. Better dairy methods. By J. H. Frandson. May, 1909.
68. Chemical and mechanical analyses of characteristic Idaho soils. By J. S. Jones. July, 1910.
69. The farmer's vegetable garden. By W. H. Wicks. Aug., 1910.
70. Strawberry culture in Idaho. By C. C. Vincent. Mar., 1911.
71. Weed pests of Idaho and methods of eradication. By O. M. Osborne. July, 1911.
72. A report on the milling properties of Idaho wheat. By J. S. Jones, H. P. Fishburn, and C. W. Colver. Dec., 1911.
73. A study of Idaho butter with suggestions for improvement. By G. E. Frevert. June, 1912.
74. Hog raising for the Idaho farmer. By W. L. Carlyle and E. J. Iddings. Aug., 1912.
75. The composition of irrigated and nonirrigated fruits. By J. S. Jones and C. W. Colver. Aug., 1912.
76. Tomato culture in Idaho. By W. H. Wicks. Mar., 1913.
77. Lamb feeding and sheep husbandry in Idaho. By W. L. Carlyle and E. J. Iddings. Sept., 1913.
78. Irrigation practice: A report of four years' investigation at the Gooding substation. By J. S. Welch. Jan., 1914.
79. Potato culture: Introduction. By W. L. Carlyle.—Potato culture for northern Idaho. By F. L. Kennard.—Potato culture under irrigation. By J. S. Welch.—Dry land potato culture. By L. C. Aicher.—Potato diseases and insect pests. By C. E. Temple. Apr., 1914.
80. Grass pastures for irrigated lands. By J. S. Welch. Nov., 1914. See 95.
81. Soils of the cut- and burned-over areas of north Idaho. By J. S. Jones and C. W. Colver. Jan., 1915.
82. Canning fruits and vegetables on the farm. By C. C. Vincent. Mar., 1915.
83. Recommended varieties of fruits for Idaho. By C. C. Vincent and G. J. Downing. Mar., 1915.
84. Annual report for year ending June 30, 1915. By J. S. Jones. Nov., 1915.
85. The use of lime-sulphur as a summer spray for apple scab. By C. C. Vincent. Feb., 1916.
86. Some poisonous plants of Idaho. By F. W. Gail.—Some suggested remedies. By A. R. Hahner. Feb., 1916.
87. Insect pests of the orchards and gardens of Idaho and their control. By W. C. Edmundson. Feb., 1916.
88. Dry-farmed and irrigated wheat. By J. S. Jones and C.W. Colver.—Baking tests. By Amy Kelly and Elizabeth Hays. May, 1916.
89. Lamb and sheep feeding experiments. By E. J. Iddings. May, 1916.
90. Creamery records. By O. W. Holmes. June, 1916.
91. Methods of clearing logged-off land. By C. H. Shattuck. Dec., 1916.
92. Annual report for year ending June 30, 1916. By J. S. Jones. Dec., 1916.
93. Experiments with small grains under irrigation. By J. S. Welch. Jan., 1917.
94. Experiments with legume crops under irrigation. By J. S. Welch. Jan., 1917.
95. The management of irrigated grass pastures. By J. S. Welch. Jan., 1917. A reissue of 80 with additional data.
96. The management of farm flocks in Idaho. By E. J. Iddings. Jan., 1917.
97. Commercial onion culture in Idaho. By C. C. Vincent. Feb., 1917.
98. Winter versus summer pruning of apple trees. By C. C. Vincent. Feb., 1917.
99. Experiments in the irrigation of apple orchards. By E. P. Taylor and G. J. Downing. May, 1917.
100. The production of clover seed under irrigation in southern Idaho. By L. C. Aicher. June, 1917.
101. The production of alfalfa seed in southern Idaho. By L. C. Aicher. July, 1917.
102. The management of dairy herds. By E. V. Ellington. Nov., 1917.
103. Performance records of some eastern wheats in Idaho. By J. S. Jones and C.W. Colver. Jan., 1918.
104. Annual report for year ending December 31, 1917. [By J. S. Jones.] Jan., 1918.
105. Trees: What, where, when and how to plant. By C. H. Shattuck and I. W. Cook. Feb., 1918.
106. The home garden in Idaho. By W. C. Edmundson and J. S. Welch. Feb., 1918.
107. Soils of Latah County, Idaho. By P. P. Peterson. May, 1918.
108. Sprays for the control of San José scale. By W. C. Edmundson. Feb., 1918.

109. Irrigation and the protein content of wheat. By J. S. Jones, C. W. Colver, and H. P. Fishburn. Dec., 1918.
110. Drying and serving fruits and vegetables in the home. By C. C. Vincent and Jessie M. Hoover. June, 1918.
111. Power farming in Idaho: Some results obtained by a recent survey. By J. C. Wooley. Sept., 1918.
112. A preliminary report on the clover aphis and methods for its control. By R. H. Smith. Dec., 1918.
113. Work and progress of the agricultural experiment station for the year ended December 31, 1918. By E. J. Iddings. Dec., 1918.
114. The "slick spots" of middle western Idaho with suggestions for their elimination. By P. P. Peterson. Feb., 1919.
115. Field pea production in north Idaho. By H. W. Hulbert. Mar., 1919.
116. Swine management in Idaho. By O. E. McConnell. Mar., 1919.
117. Feeding for egg production: Vegetable versus animal protein in egg production. By Pren Moore. Aug., 1919.
118. Soil and climatic factors in relation to crop production on the Palouse silt loam of Idaho. A report of progress. By P. P. Peterson. Sept., 1919.
119. Work and progress of the agricultural experiment station for the year ended December 31, 1919. By E. J. Iddings. Jan., 1920.
120. Forage crops for the nonirrigated lands of Idaho. By R. K. Bonnett. Mar., 1920.
121. Experiments in the size of the seed piece and other factors in the production of potatoes under irrigation in southern Idaho. By L. C. Aicher. May, 1920.

ILLINOIS.

Agricultural Experiment Station of the University of Illinois, Urbana.

BULLETINS.

1. [Account of organization of the station and outline of proposed work.] By S. H. Peabody. May, 1888.
2. Ensilage. By T. F. Hunt. Aug., 1888.
3. Field experiments in oats, 1888. By G. E. Morrow and T. F. Hunt. Nov., 1888.
4. Field experiments with corn, 1888. By G. E. Morrow and T. F. Hunt.—Garden experiments with sweet corn, 1888. By T. J. Burrill and G. W. McCluer. Feb., 1889.
5. Grasses and clovers: Effect of ripeness on yield and composition. By T. F. Hunt. May, 1889.
6. A bacterial disease of corn. By T. J. Burrill. Aug., 1889.
7–8. 7. The biology of ensilage. By T. J. Burrill.—Field experiments with oats, 1889. By T. F. Hunt. Nov., 1889.—8. Field experiments with sweet corn, 1889. By T. F. Hunt and G. E. Morrow.—Garden experiments with sweet corn, 1889. By T. J. Burrill and G. W. McCluer. Feb., 1890.
9. Milk and butter tests. By G. E. Morrow.—Milk tests. By A. G. Manns.—The comparative value of corn fodder and ensilage in feeding yearling heifers. By T. F. Hunt.—Analyses of corn fodder and ensilage made in connection with the foregoing experiment. By E. H. Farrington.—Value of pasture and of grain ration with pasture for young cattle. By G. E. Morrow.—Experiments in progress. May, 1890.
10. Investigations of "milk tests." By E. H. Farrington. Aug., 1890.
11. Experiments with wheat. By T. F. Hunt. Aug., 1890.
12. Field experiments with oats, 1890. By G. E. Morrow and T. F. Hunt.—Milk and butter tests. By G. E. Morrow.—Cream raising by dilution. By G. E. Morrow and E. H. Farrington.—The Hessian fly. By S. A. Forbes.—Canada thistles. By T. J. Burrill. Nov., 1890.
13. Field experiments with corn, 1890. By G. E. Morrow and T. F. Hunt.—Garden experiments with sweet corn, 1890; pop corn, tests of varieties. By T. J. Burrill and G. W. McCluer.—Growth and increase of dry matter in corn; weight of ear corn per bushel of shelled corn. By G. E. Morrow. Feb., 1891.
14. Milk tests; chemical analyses of "germ meal" and oat-dust feed. By E. H. Farrington. Feb., 1891.
15. The fruit bark beetle (*Scolytus rugulosus* Ratz.). By S. A. Forbes.—Experiments with grass seeds, and with grasses and clovers. By G. E. Morrow and T. F. Hunt.—Use of fungicides upon the apple, the potato, and the grape. By T. F. Burrill and G. W. McCluer. Feb., 1891.
16. Experiments in pig feeding. By G. E. Morrow.—Composite milk samples tested for butter fat. By E. H. Farrington.—[Title page, table of contents, and index to Bulletins 1–16. (Volume I.)] May, 1891.
17. Experiments with wheat, 1890–91. By G. E. Morrow.—Daily variations in milk and butter production of cows. By E. H. Farrington. Aug., 1891.
18. Dairying experiments. By E. H. Farrington. Nov., 1891.
19. Experiments with oats, 1891. By G. E. Morrow and F. D. Gardner.—The chinch bug in Illinois, 1891–92. By S. A. Forbes. Feb., 1892.
20. Field experiments with corn, 1891. By G. E. Morrow and F. D. Gardner. Apr., 1892.
21. Horticulture, a general report. By T. J. Burrill and G. W. McCluer.—Corn crossing. By G. W. McCluer.—Sweet corn, thickness of planting, 1891. By G. W. McCluer.—The late season and the corn crop. By G. E. Morrow. May, 1892.
22. Experiments with wheat, 1891–92. By G. E. Morrow and F. D. Gardner. Aug., 1892.
23. Experiments with oats, 1892. By G. E. Morrow and F. D. Gardner. Nov., 1892.
24. Variations in milk. By E. H. Farrington. Feb., 1893.
25. Field experiments with corn, 1892. By G. E. Morrow and F. D. Gardner. Apr., 1893.
26. The forest tree plantation. By T. J. Burrill and G. W. McCluer. May, 1893.
27. Some new points in the manipulation of the Babcock milk test. By E. H. Farrington. Sept., 1893.
28. Grapes: Test of varieties; a grape disease: method of training. By G. W. McCluer. Dec., 1893.
29. Orange rust in raspberries and blackberries. By G. P. Clinton.—A new factor in scientific agriculture. By Albert Schneider. Dec., 1893.
30. Blackberries and raspberries: Variety tests and management. By G. W. McCluer. Mar., 1894.
31. Corn and oats experiments, 1893. By G. E. Morrow, F. D. Gardner, and E. H. Farrington. Mar., 1894.
32. An acid test of cream. By E. H. Farrington. Apr., 1894.
33. The chinch bug in Illinois, 1894. By S. A. Forbes.—Alkaline tablets for testing the acidity of cream. By E. H. Farrington.—Certified tests of dairy cows. By G. E. Morrow. June, 1894.
34. Experiments with wheat, 1893–94; experiments with oats, 1894. By G. E. Morrow and F. D. Gardner.—Meteorological records. By G. E. Morrow. Aug., 1894.
35. The Russian thistle in Illinois. By G. E. Morrow. Aug., 1894.
36. Stock feeding in Illinois. By G. E. Morrow.—[Title page, table of contents, and] index to Bulletins 17–36. (Volume 2). Aug., 1894.
37. Corn experiments, 1894. By F. D. Gardner. Feb., 1895.
38. Experiments with the muscardine disease of the chinch bug, and with the trap and barrier method for the destruction of that insect. By S. A. Forbes. Mar., 1895.
39. The Russian thistle and some plants that are mistaken for it. By G. P. Clinton. Apr., 1895.

40. Potatoes: Experiments of 1892–1894, with statement of some results obtained at other stations. By G. W. McCluer.—Fungus diseases of the potato; an experiment to prevent scab and leaf blight of the potato. By G. P. Clinton. Apr., 1895.
41. Experiments with wheat, 1888–1895; experiments with oats, 1888–1895. By Eugene Davenport and W. J. Fraser. Mar., 1896.
42. Corn experiments, 1895. By Eugene Davenport and W. J. Fraser. Mar., 1896.
43. Composition and digestibility of corn ensilage, cowpea ensilage, soja bean ensilage, and corn fodder. By C. G. Hopkins. Apr., 1896.
44. Insects injurious to the seed and root of Indian corn. By S. A. Forbes. May, 1896.
45. Varieties of apples. [Summary of tests 1869–96.] By T. J. Burrill and G. W. McCluer. July, 1896.
46. Experiments with corn. By W. J. Fraser.—Attempts to grow crimson clover; on the improvement of retentive clays; drainage of the so-called "hard pan" lands of southern Illinois; on the importance of the physiological requirements of the animal body; results of an attempt to grow cattle without coarse feed. By Eugene Davenport. Jan., 1897.
47. Broom-corn smut. By G. P. Clinton. Mar., 1897.
48. The San José scale in Illinois. By S. A. Forbes. Apr., 1897.
49. The sugar beet in Illinois. By P. G. Holden and C. G. Hopkins. Jan., 1898.
50. The cost of production of corn and oats in Illinois in 1896. By N. A. Weston. Feb., 1898.
51. Variations in milk and milk production. By Eugene Davenport and W. J. Fraser. May, 1898.
52. Orchard cultivation. By T. J. Burrill and J. C. Blair. June, 1898.
53. The chemistry of the corn kernel. By C. G. Hopkins. July, 1898. Also abstract edition.
54. Spraying apple trees, with special reference to apple scab fungus. By J. C. Blair. Mar., 1899.
55. Improvement in the chemical composition of the corn kernel. By C. G. Hopkins. June, 1899.
56. Recent work on the San José scale in Illinois. By S. A. Forbes. July, 1899.
57. The smuts of Illinois agricultural plants. By G. P. Clinton. Mar., 1900.
58. Composition and digestibility of corn fodder and corn stover. By C. G. Hopkins. Apr., 1900.
59. Orchard management. By J. C. Blair. Apr., 1900.
60. The economic entomology of the sugar beet. By S. A. Forbes and C. A. Hart. Aug., 1900.
61. The farmer's vegetable garden. By J. W. Lloyd. Jan., 1901.
62. The market classes of horses. By Eugene Davenport. Feb., 1901. See 122.
63. Seed corn and some standard varieties for Illinois. By A. D. Shamel. Mar., 1901.
64. Treatment of oats for smut. By A. D. Shamel. Mar., 1901.
65. Construction and care of earth roads. By I. O. Baker. Mar., 1901.
66. Individual differences in the value of dairy cows. By W. J. Fraser. Mar., 1901.
67. Apple scab. By G. P. Clinton. Dec., 1901.
68. Important details of spraying. By A. V. Steubenrauch. Jan., 1902.
69. Apple rots in Illinois. By G. P. Clinton. Feb., 1902.
70. Canker of apple trees. By Heinrich Hasselbring. Apr., 1902.
71. Experiments with insecticides for the San José scale. By S. A. Forbes. Apr., 1902.
72. Additional insecticide experiments for the San José scale. By S. A. Forbes. May, 1902.
73. Comparison of silage and shock corn for wintering calves intended for beef production. By H. W. Mumford. June, 1902.
74. Standard milk and cream. By W. J. Fraser. June, 1902.
75. Standardization of milk and cream. By Oscar Erf. July, 1902.
76. Alfalfa on Illinois soils. By C. G. Hopkins. July, 1902. Other editions, May, 1903; Mar., 1906; June, 1910; July, 1913.
77. Bitter rot of apples. By T. J. Burrill and J. C. Blair. July, 1902.
78. Market classes and grades of cattle, with suggestions for interpreting market quotations. By H. W. Mumford. July, 1902. Second edition, July, 1904. See 90.
79. The corn bill-bugs in Illinois. By S. A. Forbes. Oct., 1902.
80. Methods and results of field insecticide work against the San José scale, 1899–1902. By S. A. Forbes. Oct., 1902.
81. Forcing tomatoes. By A. C. Beal. Nov., 1902.
82. Methods of corn breeding. By C. G. Hopkins. Dec., 1902.
83. Feeds supplementary to corn for fattening steers. By H. W. Mumford. Jan., 1903.
84. Dairy conditions and suggestions for their improvement. By W. J. Fraser. Feb., 1903.
85. Records of individual cows on dairy farms. By A. J. Glover. June, 1903.
86. Climate of Illinois. By J. G. Mosier. June, 1903. See 208.
87. The structure of the corn kernel and the composition of its different parts. By C. G. Hopkins, L. H. Smith, and E. M. East. Aug., 1903. Other editions, May, 1906; Feb., 1913.
88. Soil treatment for wheat in rotations, with special reference to southern Illinois soils. By C. G. Hopkins. Aug., 1903.
89. Notes on the insecticide use of the gasoline blast lamp. By S. A. Forbes. Nov., 1903. Also abstract edition, Dec., 1903.
90. Fattening steers of the various market grades. By H. W. Mumford. Dec., 1903. Supplements 78.
91. Preventing contamination of milk. By W. J. Fraser. Dec., 1903.
92. City milk supply. By W. J. Fraser. Dec., 1903.
93. Soil treatment for peaty swamp lands, including reference to sand and "alkali" soils. By C. G. Hopkins. Jan., 1904. See 157.
94. Nitrogen bacteria and legumes. By C. G. Hopkins. Feb., 1904. Other editions, Nov., 1905; Feb., 1910; Feb., 1912.
95. The more important insect injuries to Indian corn. By S. A. Forbes. Nov., 1904.
96. The testing of corn for seed. By A. N. Hume. Nov., 1904. Other editions, Jan., 1906; Oct., 1909.
97. Market classes and grades of swine. By William Dietrich. Nov., 1904.
98. The curculio and the apple. By C. S. Crandall. Feb., 1905.
99. Soil treatment for the lower Illinois glaciation. By C. G. Hopkins and J. E. Readhimer. Mar., 1905.
100. Directions for the breeding of corn, including methods for the prevention of inbreeding. By C. G. Hopkins, L. H. Smith, and E. M. East. Mar., 1905. Other editions, Jan., 1907; Feb., 1913.
101. Crops for the silo, cost of filling, and effect of silage on the flavor of milk. By W. J. Fraser. Apr., 1905.
102. The construction of silos. By W. J. Fraser. June, 1905.
103. Comparison of methods of preparing corn and clover hay for fattening steers. By H. W. Mumford. Aug., 1905.
104. Field experiments and observations on insects injurious to Indian corn. By S. A. Forbes. Oct., 1905. Also abstract edition, Nov., 1905.
105. The farmer's vegetable garden [experiments 1901–02]. By J. W. Lloyd. Feb., 1906.
106. Spraying apples: Relative merits of liquid and dust applications. By C. S. Crandall. Feb., 1906.
107. Comparative experiments with various insecticides for the San José scale. By S. A. Forbes. Apr., 1906. Also abstract edition Apr., 1906.
108. Spraying apples for the plum curculio. By S. A. Forbes. May, 1906. Also abstract edition, May, 1906.

109. The location, construction, and operation of hog houses. By William Dietrich. June, 1906. Second edition, 1912.
110. Storage barn, sheds, feed lots and other equipment for feeding experimental cattle in car load lots. By H. W. Mumford and E. S. Good. July, 1906.
111. Maintenance rations for beef breeding cows. By H. W. Mumford. Aug., 1906. Reprint with minor changes. Mar., 1914.
112. The cottony maple scale in Illinois. By S. A. Forbes. Jan., 1907. Also abstract edition.
113. The shrinkage of ear corn in cribs. By A. N. Hume and O. D. Center. Mar., 1907.
114. Spraying for the codling moth. By J. W. Lloyd. Mar., 1907.
115. Soil improvement for the worn hill lands of Illinois. By C. G. Hopkins and J. E. Readhimer. Apr., 1907.
116. On the life history, habits, and economic relations of the white grubs and May beetles. By S. A. Forbes. Aug., 1907.
117. Bitter rot of apples: Horticultural investigations. By J. C. Blair. Aug., 1907.
118. Bitter rot of apples: Botanical investigations. By T. J. Burrill. Sept., 1907.
119. Type and variability in corn. By Eugene Davenport and H. L. Rietz. Oct., 1907. Appendix, p. 27-38. Graphic representation of statistics by H. L. Rietz, was not included in all copies issued.
120. Milk supply of Chicago and twenty-six other cities By J. M. Trueman. Nov., 1907.
121. Variety tests of wheat. By A. N. Hume, O. D. Center, and Leonard Hegnauer. Jan., 1908.
122. Market classes and grades of horses and mules. By R. C. Obrecht. Jan., 1908. Supersedes 62.
123. The fertility in Illinois soils. By C. G. Hopkins and J. H. Pettit. Feb., 1908. Second edition, Mar., 1911.
124. Marketing the muskmelon. By J. W. Lloyd. Apr., 1908.
125. Thirty years of crop rotations on the common prairie soil of Illinois. By C. G. Hopkins, J. E. Readhimer, and W. G. Eckhardt. May, 1908.
126. Distance between hills for corn in the Illinois corn belt. By A. N. Hume, C. D. Center, and Leonard Hegnauer. July, 1908.
127. A study of the factors influencing the improvement of the potato. By E. M. East. Aug., 1908. Also abstract edition.
128. Ten generations of corn breeding. By L. H. Smith. Sept., 1908. Appendix, p. 489-575, chiefly tables, was not included in all copies issued.
129. Market classes and grades of sheep. By W. C. Coffey. Nov., 1908. Reprint with minor changes. Mar., 1914.
130. Experiments with repellents against the corn root-aphis, 1905 and 1906. By S. A. Forbes. Dec., 1908.
131. Habits and behavior of the corn-field ant, *Lasius niger americanus*. By S. A. Forbes. Dec., 1908.
132. The effect of selection upon certain physical characters in the corn plant. By L. H. Smith. Feb., 1909. Reprint with minor changes. Mar., 1915.
133. Ear rots of corn. By T. J. Burrill and J. T. Barrett. Feb., 1909.
134. The insect pests of clover and alfalfa. By J. W. Folsom. Apr., 1909.
135. Bordeaux mixture. By C. S. Crandall. May, 1909. Also abstract edition.
136. Methods of seeding oats, drilling and broadcasting. By A. N. Hume, O. D. Center, and Leonard Hegnauer. July, 1909.
137. A study of factors influencing the composition of butter. By C. E. Lee, N. W. Hepburn, and J. M. Barnhart. Sept., 1909.
138. Pasteurization as a factor in making butter from cream skimmed on the farm. By C. E. Lee. Sept., 1909.
139. Composition of market butter. By C. E. Lee and J. M. Barnhart. Oct., 1909.
140. Dairy suggestions from European conditions as seen in the British Isles, Holland, and Denmark. By W. J. Fraser and R. E. Brand. Oct., 1909.
141. Relative efficiency of different rations for fleshing horses for market. By R. C. Obrecht. Nov., 1909.
142. Short-fed steers: A comparison of methods of feeding. By H. W. Mumford and H. O. Allison. Nov., 1909. Reprint [with minor changes.] Mar., 1914.
143. Economy of the round dairy barn. By W. J. Fraser. Feb., 1910.
144. Growing tomatoes for early market. By J. W. Lloyd and I. S. Brooks. Feb., 1910. Four editions, last, Mar., 1914.
145. Quantitative relationships of carbon, phosphorus, and nitrogen in soils. By Robert Stewart. Apr., 1910. Second edition, 1912.
146. Alfalfa hay versus timothy hay and alfalfa hay versus bran for dairy cows. By W. J. Fraser and C. C. Hayden. June, 1910. Other editions Nov., 1912; Apr., 1916.
147. Market classes and grades of meat. By L. D. Hall. July, 1910. Also abstract edition.
148. On the measurement of correlation with special reference to some characters of Indian corn. By H. L. Rietz and L. H. Smith. Nov., 1910. Also abstract edition.
149. Tuberculosis of farm animals. By C. F. Briscoe and W. J. MacNeal. Feb., 1911. Also abstract edition.
150. Feeding farm work horses. By R. C. Obrecht. Aug., 1911.
151. Some important insects of Illinois shade trees and shrubs. By S. A. Forbes. Oct., 1911.
152. Contagious abortion of cows. By W. J. MacNeal and H. W. Mumford. Nov., 1911.
153. Comparison of methods of sampling cream for testing. By C. E. Lee and N. W. Hepburn. Feb., 1912. Also abstract edition.
154. What is the matter with the elms in Illinois? By S. A. Forbes. Feb., 1912.
155. Fertilizer experiments with muskmelons. By J. W. Lloyd. Apr., 1912. Also abstract edition.
156. Insects injurious to stored grains and their ground products. By A. A. Girault. July, 1912.
157. Peaty swamp lands; sand and alkali soils. By C. G. Hopkins, J. E. Readhimer, and O. S. Fisher. July, 1912. Includes results previously published in '93.
158. Relative economy, composition, and nutritive value of the various cuts of beef. By L. D. Hall and A. D. Emmett. July, 1912. Appendix, p. 200-233, consisting of tables, was not included in all copies issued.
159. Balanced versus unbalanced rations for dairy cows. By W. J. Fraser and C. C. Hayden. July, 1912.
160. Official records of purebred dairy cows. By C. C. Hayden. July, 1912.
161. Fate of tubercle bacilli outside the animal body. By C. F. Briscoe. Nov., 1912. Also abstract edition.
162. Tuberculosis in the university dairy herd. By C. C. Hayden. Jan., 1913.
163. The maintenance requirement of swine. By William Dietrich. June, 1913. Also abstract edition.
164. Milk required to raise a dairy calf. By W. J. Fraser and R. E. Brand. July, 1913.
165. The element of uncertainty in the interpretation of feeding experiments. By H. H. Mitchell and H. S. Grindley. July, 1913. Also abstract edition.
166. A review of American investigations on fattening lambs with special reference to the protein and energy requirements. By Sleeter Bull and A. D. Emmett. Jan., 1914. Also abstract edition.
167. Proportions of shelled corn and alfalfa hay for fattening western lambs. By W. C. Coffey. Mar., 1914.

168. A study of the development of growing pigs with special reference to the influence of the quantity of protein consumed. By A. D. Emmett, H. S. Grindley, W. E. Joseph and R. H. Williams. Mar., 1914. Also abstract edition.
169. A study of the ash content of growing pigs with special reference to the influence of the quantity of protein consumed. By R. H. Williams and A. D. Emmett. May, 1914. Also abstract edition.
170. Coefficients of digestibility of some common rations for swine. By William Dietrich and H. S. Grindley. May, 1914. Also abstract edition.
171. A study of the phosphorous content of growing pigs with special reference to the influence of the quantity of protein consumed. By R. H. Williams and A. D. Emmett. June, 1914. Also abstract edition.
172. A study of the digestibility of rations for steers with special reference to the influence of the character and the amount of feed consumed. By H. W. Mumford [and others]. June, 1914. Also abstract edition.
173. A study of the forms of nitrogen in growing pigs with special reference to the influence of the quantity of protein consumed. By W. E. Joseph. June, 1914. Also abstract edition.
174. An efficient and practicable method for controlling melon lice. By C. E. Durst. July, 1914.
175. Experiments in onion culture. By J. W. Lloyd. July, 1914. Also abstract edition.
176. The use of commercial fertilizers in growing carnations. By H. B. Dorner, F. W. Muncie, and A. H. Nehrling. Nov., 1914. Also abstract edition.
177. Radium as a fertilizer. By C. G. Hopkins and W. H. Sachs. Jan., 1915.
178. Recent Illinois work on the corn root-aphis and the control of its injuries. By S. A. Forbes. Jan., 1915.
179. A biochemical study of nitrogen in certain legumes. By A. L. Whiting. Mar., 1915. Also abstract edition.
180. Observations and experiments on the San José scale. By S. A. Forbes. Mar., 1915.
181. Soil moisture and tillage for corn. By J. G. Mosier and A. F. Gustafson. Apr., 1915.
182. Potassium from the soil. By C. G. Hopkins and J. P. Aumer. May, 1915.
183. Prices and shrinkage of farm grains. By W. L. Burlison and O. M. Allyn. Nov., 1915.
184. Tests with nitrate of soda in the production of early vegetables. By J. W. Lloyd. Nov., 1915.
185. Field experiments in spraying apple orchards. By B. S. Pickett [and others]. Feb., 1916. Also abstract edition.
186. A general survey of the May beetles (Phyllophaga) of Illinois. By S. A. Forbes. Feb., 1916.
187. The influence of trees and crops on injury by white grubs. By S. A. Forbes. Feb., 1916.
188. Methods of fertilizing sweet potatoes. By C. E. Durst. Apr., 1916.
189. Parasitic rhizoctonias in America. By G. L. Peltier. June, 1916. Also abstract edition.
190. Soil bacteria and phosphates. By C. G. Hopkins and A. L. Whiting. June, 1916.
191. Yields of different varieties of corn in Illinois. By W. L. Burlison and O. M. Allyn. Aug., 1916.
192. Feeding pure-bred draft fillies. By J. L. Edmonds. Dec., 1916.
193. Summary of Illinois soil investigations. By C. G. Hopkins, J. G. Mosier, and F. C. Bauer. Dec., 1916.
194. A new limestone tester. By C. G. Hopkins. Jan., 1917. Bul. 194 supersedes Cir. 185.
195. Yields of spring grains in Illinois. By W. L. Burlison and O. M. Allyn. Jan., 1917.
196. The use of commercial fertilizers in growing roses. By F. W. Muncie. Feb., 1917. Also abstract edition.
197. A study of the rate and economy of gains of fattening steers with special reference to the influence of the amount and the character of feed consumed. By H. W. Mumford, H. S. Grindley, A. D. Emmett, and Sleeter Bull. Mar., 1917. Also abstract edition.
198. Soybeans and cowpeas in Illinois. By W. L. Burlison and O. M. Allyn. Apr., 1917.
199. Germ content of milk: I, As influenced by the factors at the barn. By M. J. Prucha and H. M. Weeter. May, 1917.
200. Digestion experiments with pigs with special reference to the influence of one feed upon another, and to the individuality of pigs. By H. S. Grindley, W. J. Carmichael, and C. I. Newlin. May, 1917. Also abstract edition.
201. Yields of winter grains in Illinois. By W. L. Burlison and O. M. Allyn. June, 1917.
202. Is symbiosis possible between legume bacteria and non-legume plants. By T. J. Burrill and Roy Hansen. July, 1917. Also abstract edition.
203. Seed production in apples. By C. S. Crandall. Aug., 1917. Also abstract edition.
204. Germ content of milk: II, As influenced by the utensils. By M. J. Prucha, H. M. Weeter, and W. H. Chambers. Feb., 1918.
205. The grasses of Illinois. By Edna Mosher. Mar., 1918.
206. Field experiments in spraying apple orchards in 1913 and 1914. By B. S. Pickett, O. S. Watkins, W. A. Ruth, and A. J. Gunderson. Apr., 1918. Also abstract edition.
207. Washing of soils and methods of prevention. By J. G. Mosier and A. F. Gustafson. Apr., 1918.
208. Climate of Illinois. By J. G. Mosier. Apr., 1918. Also abstract edition.
209. Fertilizing constituents excreted by two-year old steers. By H. S. Grindley, H. W. Mumford, A. D. Emmett, and Sleeter Bull. June, 1918. Also abstract edition.
210. Field investigations of forage poisoning in cattle and horses. By H. P. Rusk and H. S. Grindley. June, 1918.
211. Apple-bud selection; apple seedlings from selected trees. By C. S. Crandall. June, 1918. Also abstract edition.
212. Limestone action on acid soils. By Robert Stewart and F. A. Wyatt. Jan., 1919. Also abstract edition.
213. Two Illinois rhubarb diseases. By F. L. Stevens. Jan., 1919.
214. Spring wheat for Illinois. By W. L. Burlison and R. W. Stark. Feb., 1919.
215. A study of the relative reliability of official tests of dairy cows. By W. W. Yapp. Feb., 1919. Also abstract edition.
216. The cost of milk production computed on the year basis. By F. A. Pearson. Apr., 1919.
217. An apple canker due to *Cytospora*. By F. L. Stevens. May, 1919.
218. The pruning of winter-injured peach trees. By A. J. Gunderson. May, 1919.
219. Illinois crop yields from soil experiment fields. By C. G. Hopkins, F. W. Garrett, J. E. Whitchurch, and H. F. T. Fahrnkopf. May, 1919.
220. Black spot of onion sets: *Volutella circinans* and its perithecial form, *Cleistothecopsis circinans*. By F. L. Stevens and Esther Y. True. May, 1919.
221. Snapdragon rust. By G. L. Peltier. Aug., 1919.
222. Field experiments in spraying apple orchards for the control of apple blotch. By A. J. Gunderson. Sept., 1919.
223. Carnation stem rot and its control. By G. L. Peltier. Sept., 1919
224. The seasonal cost of milk production. By F. A. Pearson. Dec., 1919.
225. Nitrate production in field soils in Illinois. By A. L. Whiting and W. R. Schoonover. Mar., 1920. Also abstract edition.
226. Variations in farrow, with special reference to the birth weight of pigs. By W. J. Carmichael and J. B. Rice. May, 1920. Also abstract edition.

227. Sulfur in relation to soil fertility. By Robert Stewart. June, 1920.
228. An epidemic of ropy milk. By H. A. Harding and M. J. Prucha. June, 1920.
229. Dendrophoma leaf blight of strawberry. By H. W. Anderson. July, 1920.
230. Elimination of germs from dairy utensils: I, By rinsing; II, by drying in sun and air. By M. J. Prucha and H. A. Harding. Nov., 1920.

SOIL REPORTS.

1. Clay County soils. By C. G. Hopkins, J. G. Mosier, J. H. Pettit, and J. E. Readhimer. Mar., 1912.
2. Moultrie County soils. By C. G. Hopkins, J. G. Mosier, J. H. Pettit, and J. E. Readhimer. June, 1911.
3. Hardin County soils. By C. G. Hopkins, J. G. Mosier, J. H. Pettit, and J. E. Readhimer. Aug., 1912.
4. Sangamon County soils. By C. G. Hopkins, J. G. Mosier, J. H. Pettit, and J. E. Readhimer. Sept., 1912.
5. La Salle County soils. By C. G. Hopkins, J. G. Mosier, J. H. Pettit, and J. E. Readhimer. July, 1913.
6. Knox County soils. By C. G. Hopkins, J. G. Mosier, J. H. Pettit, and J. E. Readhimer. Aug., 1913.
7. McDonough County soils. By C. G. Hopkins, J. G. Mosier, J. H. Pettit, and O. S. Fisher. Sept., 1913.
8. Bond County soils. By C. G. Hopkins, J. G. Mosier, J. H. Pettit, and O. S. Fisher. Oct., 1913.
9. Lake County soils. By C. G. Hopkins, J. G. Mosier, E. Van Alstine, and F. W. Garrett. Apr., 1915.
10. McLean County soils. By C. G. Hopkins, J. G. Mosier, E. Van Alstine, and F. W. Garrett. May, 1915.
11. Pike County soils. By C. G. Hopkins, J. G. Mosier, E. Van Alstine, and F. W. Garrett. June, 1915.
12. Winnebago County soils. By C. G. Hopkins, J. G. Mosier, E. Van Alstine, and F. W. Garrett. Jan., 1916.
13. Kankakee County soils. By C. G. Hopkins, J. G. Mosier, E. Van Alstine, and F. W. Garrett. June, 1918.
14. Tazewell County soils. By C. G. Hopkins, J. G. Mosier, E. Van Alstine, and F. W. Garrett. Oct., 1916.
15. Edgar County soils. By C. G. Hopkins, J. G. Mosier, E. Van Alstine, and F. W. Garrett. Mar., 1917.
16. Du Page County soils. By C. G. Hopkins, J. G. Mosier, E. Van Alstine, and F. W. Garrett. Aug., 1917.
17. Kane County soils. By C. G. Hopkins, J. G. Mosier, E. Van Alstine, and F. W. Garrett. Aug., 1917.
18. Champaign County soils. By C. G. Hopkins, J. G. Mosier, E. Van Alstine, and F. W. Garrett. Nov., 1918.

INDIANA.

Agricultural Experiment Station of Indiana, Lafayette.

BULLETINS.[4]

1. The Hessian fly. By F. M. Webster. [Jan.], 1885.
2. Experiments with nitrogenous, phosphatic, and other fertilizers. By W. C. Latta. [Jan.], 1885.
3. Insects affecting growing wheat. By F. M. Webster. [Apr.], 1885.
4. Experiments with wheat. By W. C. Latta. [Sept.], 1885.
5. Experiments with small fruits. By James Troop. [Nov.], 1885.
6. Experiments with oats and corn. By W. C. Latta. [Mar.], 1886.
7. Commercial fertilizers and notes on agricultural chemistry. By R. B. Warder. 1886.
8. Experiments with wheat. By W. C. Latta. [Aug.], 1886.
9. The American Meromyza. By F. M. Webster. [Oct.], 1886.
10. Report of the director of the Indiana State Horticultural Experiment Stations. By James Troop. Dec., 1886.
11. Commercial fertilizers. By R. B. Warder. 1887.
12. Experiments with wheat. By W. C. Latta. [Aug.], 1887.
13. Report of new organization. By J. H. Smart. Jan., 1888.
14. Experiments with oats and corn. By W. C. Latta. Apr., 1888.
15. Concerning the potato tuber. By J. C. Arthur. June, 1888.
16. Experiments with wheat; crop rotations. By W. C. Latta. Aug., 1888.
17. Parturient apoplexy. By T. D. Hinebauch. Nov., 1888.
18. Experiments with vegetables. By James Troop. Jan., 1889.
19. Spotting of peaches and cucumbers. By J. C. Arthur. Jan., 1889.
20. Experiments in cross-fertilization; the culture of tropical ferns. By Pierre Van Landeghem. Jan., 1889.
21. Rational feeding. By C. A. Wulff. Feb., 1889.
22. Commercial fertilizers. By H. A. Huston. Mar., 1889.
23. Experiments with corn. By W. C. Latta. Apr., 1889.
24. Experiments on milk production: Cold versus warm water; divided milkings; studies on milk secretions. By C. A. Wulff. May, 1889.
25. Entomological experiments. By F. M. Webster. June, 1889.
26. Wheat rust. By H. L. Bolley. July, 1889.
27. Field experiments with wheat. By W. C. Latta. Aug., 1889.
28. Smut of wheat and oats. By J. C. Arthur. Sept., 1889.
29. Grasses of Indiana. By James Troop. Dec., 1889.
30. Influenza. By T. D. Hinebauch. Feb., 1890.
31. Small fruits and vegetables. By James Troop. Apr., 1890.
32. Treatment of smut in wheat. By J. C. Arthur.—Field experiments with wheat. By W. C. Latta.—A note on two inferior fertilizers. By C. S. Plumb. July, 1890.
33. Small fruits. By James Troop.—Entomological notes. By F. M. Webster.—The absorptive power of soils. By H. A. Huston and Arthur Goess. Oct., 1890.
34. Sugar beets. By H. A. Huston. Field experiments with commercial fertilizers and manure on barley and oats. By W. C. Latta.—Tests of vegetables. By James Troop. Feb., 1891.
35. Loose smut of oats. By J. C. Arthur. Mar., 1891. Pages 98-108 containing tables of germination are omitted from the larger part of the edition.
36. Field experiments with wheat; testing grain. By W. C. Latta.—Wheat scab. By J. C. Arthur.—Forms of nitrogen for wheat. By H. A. Huston. Aug., 1891.
37. 1, Steer feeding: A comparison of cut with uncut clover. By C. S. Plumb.—2, The composition and valuation of Indiana feeding stuffs. By H. A. Huston. Dec., 1891.
38. 1, Small fruits; 2, treatment of powdery mildew and black rot; 3, vegetables. By James Troop. Mar., 1892.

---

[4] Bulletins of the experiment station properly begin with No. 13, previous numbers having been issued as bulletins of the Purdue University School of Agriculture prior to the organization of the experiment station under the Hatch Act.

39. 1, Field experiments with corn. By W. C. Latta.—2, Sugar beets. By H. A. Huston.—3, Diseases of the sugar-beet root. By J. C. Arthur and K. E. Golden. Apr., 1892.
40. The silo and silage in Indiana. By C. S. Plumb. June, 1892.
41. 1, Field experiments with wheat. By W. C. Latta.—2, Forms of nitrogen for wheat. By H. A. Huston. Aug., 1892.
42. The potato: The relation of number of eyes on the seed tuber to the product. By J. C. Arthur. Nov., 1892.
43. a, Field experiments with corn. By W. C. Latta.—b, The sugar beet in Indiana. By H. A. Huston. Mar., 1893.
44. Dairy experiments. By C. S. Plumb. May, 1893.
45. 1, Field experiments with wheat. By W. C. Latta.—2, Forms of nitrogen for wheat. By H. A. Huston. Aug., 1893.
46. 1, A modification of Grandeau's method for the determination of humus; 2, preliminary investigations relating to the determination of crude fiber. By H. A. Huston and W. F. McBride. Sept., 1893.
47. 1, Does it pay to shelter milch cows in winter? 2, Upon skim milk as a food for calves. By C. S. Plumb. Nov., 1893.
48. Experiments with small fruits. By James Troop. Jan., 1894.
49. Sugar beets. By H. A. Huston. Mar., 1894.
50. Field experiments with corn and oats. By W. C. Latta. Apr., 1894.
51. I, Field experiments with wheat. By W. C. Latta and G. R. Ives.—II, Forms of nitrogen for wheat. By H. A. Huston. Aug., 1894.
52. Wild or prickly lettuce. By J. C. Arthur. Nov., 1894.
53. Horticulture and entomology: *a*, Influence of climate on onions from seed; *b*, potato scab; *c*, Russian apples in Indiana; *d*, protecting fruit from birds; *e*, the fruit bark-beetles. By James Troop. Dec., 1894.
54. New chemical apparatus. By H. A. Huston. Feb., 1895.
55. Experiments with small fruits. By James Troop.—Experiments with corn and oats. By W. C. Latta and G. R. Ives.—Sugar beets. By H. A. Huston. Mar., 1895.
56. Field experiments with wheat. By W. C. Latta and S. P. Carithers.—Potato scab and its prevention. By J. C. Arthur. Aug., 1895.
57. The improvement of unproductive black soils. By H. A. Huston. Nov., 1895.
58. Hog cholera and swine plague in Indiana. By A. W. Bitting. Feb., 1896.
59. Bacteriosis of carnations. By J. C. Arthur and H. L. Bolley. Mar., 1896.
60. The American persimmon. By James Troop and O. M. Hadley.—Composition of the persimmon. By H. A. Huston and J. M. Barrett. Apr., 1896.
61. Field experiments with wheat. By W. C. Latta and W. B. Anderson. Aug., 1896.
62. The udder of the cow. By C. S. Plumb. Oct., 1896.
63. Bovine tuberculosis in Indiana. By A. W. Bitting. Dec., 1896.
64. Field experiments with corn, oats, and forage plants. By W. C. Latta and W. B. Anderson. Apr., 1897.
65. Formalin for prevention of potato scab. By J. C. Arthur. June, 1897.
66. Indoor lettuce culture. By William Stuart. Oct., 1897. Also condensed edition.
67. Wheat and corn as food for pigs. By C. S. Plumb and W. B. Anderson. Dec., 1897.
68. The sugar beet in Indiana. By H. A. Huston and J. M. Barrett. Mar,, 1898.
69. Insecticides, fungicides, and spraying. By James Troop. Mar., 1898.
70. The relation of water supply to animal diseases. By A. W. Bitting. May, 1898.
71. I, Corn meal and shorts as food for pigs. By C. S. Plumb and W. B. Anderson.—II, Skim milk as food for young growing chickens. By W. B. Anderson. June, 1898.
72. Field experiments with wheat. By W. C. Latta and W. B. Anderson. Aug., 1898.
73. Tests of strawberries, raspberries, blackberries, and grapes. By James Troop. Oct., 1898.
74. A native white bedding plant: The starry grasswort (*Cerastium arvense oblongifolium*). By J. C. Arthur. Nov., 1898.
75. The sugar beet in Indiana in 1898. By H. A. Huston and A. H. Bryan. Jan., 1899.
76. Skim milk as a food for young growing chickens. By W. B. Anderson. Mar., 1899.
77. Field experiments with corn. By W. C. Latta and W. B. Anderson.—Mangel wurzels and the cost of production. By H. E. Van Norman.—Formalin for grain and potatoes. By J. C. Arthur. Mar., 1899.
78. The San José and other scale insects, and the Indiana nursery inspection law. By James Troop. May, 1899.
79. Roots as food for pigs. By C. S. Plumb and H. E. Van Norman. June, 1899.
80. Sheep scab. By A. W. Bitting. Sept., 1899.
81. Field tests with fertilizers on heavy clay lands. By H. A. Huston. Dec., 1899.
82. Roots and other succulent food for swine. By C. S. Plumb. Mar., 1900.
83. Tests of small fruits. By James Troop. Aug., 1900.
84. Growing lettuce with chemical fertilizers. By William Stuart. Sept., 1900.
85. Chrysanthemum rust. By J. C. Arthur. Oct., 1900.
86. On the amount of water in slop fed fattening pigs. By C. S. Plumb and H. E. Van Norman. Dec., 1900.
87. Formalin as a preventive of oat smut. By William Stuart. Mar., 1901.
88. Systems of cropping with and without fertilization. By W. C. Latta and J. H. Skinner. May, 1901.
89. The source of milk supply for towns and cities. By C. S. Plumb. July, 1901.
90. Tankage as a food for pigs. By C. S. Plumb and H. E. Van Norman. Oct., 1901.
91. The modern silo. By C. S. Plumb. Jan., 1902.
92. Fertilizer tests on tomatoes. By H. A. Huston. Apr., 1902.
93. The influence of condimental stock food in fattening swine. By C. S. Plumb. June, 1902.
94. Diseases of sheep. By R. A. Craig and A. W. Bitting. Feb., 1903.
95. Unproductive black soils. By H. A. Huston. Mar., 1903.
96. Suggestions concerning the care of milk and butter making on the farm. By H. E. Van Norman. July, 1903.
97. On the value of distillery dried grains as a food for work horses. By C. S. Plumb. Oct., 1903.
98. Three edible toadstools. By J. C. Arthur. Feb., 1904.
99. Tests of small fruits. By James Troop. Mar., 1904.
100. Diseases of swine. By R. A. Craig and A. W. Bitting. Sept., 1904.
101. Alfalfa in Indiana. By A. T. Wiancko and M. L. Fisher. Feb., 1905.
102. Apple growing in Indiana. By James Troop. Mar., 1905.
103. Rapid method of removing smut from seed oats. By J. C. Arthur. Mar., 1905.
104. A simple alkali test for ripeness of cream. By H. E. VanNorman. Mar., 1905.
105. Corn improvement in Indiana. By A. T. Wiancko. Mar., 1905.
106. Commercial fertilizers. By Arthur Goss and W. J. Jones, jr. May, 1905.
107. Agriculture at Purdue University. By W. E. Stone. July, 1905.

108. Soy beans, middlings, and tankage as supplemental foods in pork production. By J. H. Skinner. July, 1905.
109. Examination of horses for soundness. By G. H. Roberts. Nov., 1905.
110. Corn improvement. By A. T. Wiancko. Jan., 1906. Rev[sed edition. Mar., 1908.
111. Indiana plant diseases in 1905. By F. D. Kern. Mar., 1906.
112. Commercial fertilizers. By Arthur Goss and W. J. Jones, jr. Apr., 1906.
113. Characteristics of some of the contagious and infectious stock diseases. By A. W. Bitting and G. H. Roberts. June, 1906.
114. Winter wheat. By A. T. Wiancko and M. L. Fisher. Aug., 1906.
115. Steer feeding, I. By J. H. Skinner and W. A. Cochel. Dec., 1906.
116. The hand separator and the gravity systems of creaming. By O. F. Hunziker. Dec., 1906.
117. Results of cooperative tests of varieties of corn, wheat, oats, soy beans and cow peas. By A. T. Wianck. Feb., 1907. See 149.
118. How to control the San José scale and other orchard pests. By James Troop and C. G. Woodbury. Mar., 1907.
119. Indiana plant diseases in 1906. By F. D. Kern. Mar., 1907.
120. Soy beans, cow peas, and other forage crops. By A. T. Wiancko and M. L. Fisher. Mar., 1907. See also 172.
121. Commercial fertilizers. By W. J. Jones, jr. and O. C. Haworth. May, 1907.
122. Alfalfa in Indiana. By A. T. Wiancko. June, 1907.
123. Commercial melon growing. By James Troop and C. G. Woodbury. Feb., 1908.
124. Results of cooperative tests of varieties of corn, wheat, oats, soy beans and cowpeas, 1907. By A. T. Wiancko and C. O. Cromer. Feb., 1908. See 149.
125. Commercial fertilizers. By W. J. Jones, jr., O. C. Haworth and E. G. Proulx. Apr., 1908.
126. Supplements to corn for fattening hogs in dry lot. By J. H. Skinner and W. A. Cochel. June, 1908.
127. Records from Indiana dairy herds. By O. F. Hunziker, H. A. Hopper, and H. J. Fidler. Sept., 1908.
128. The small fruits: Information concerning their culture. By James Troop. Sept., 1908.
129. Steer feeding: II, Winter steer feeding, 1906–7—1907–8. By J. H. Skinner and W. A. Cochel. Oct., 1908.
130. Steer feeding: III, Results of short versus long feeding periods. By J. H. Skinner and W. A. Cochel. Nov., 1908.
131. Concentrated commercial feeding stuffs. By W. J. Jones, jr., O. C. Haworth, and J. B. Abbott. Nov., 1908.
132. Results of cooperative tests of varieties of corn, wheat, oats, soy beans, and cowpeas, 1908. By A. J. Wiancko and C. O. Cromer. Mar., 1909. See 149.
133. Commercial fertilizers. By W. J. Jones, jr. [and others]. Mar., 1909.
134. The estimation of fat in unsweetened evaporated milk by modified methods. By O. F. Hunziker and G. W. Spitzer. June, 1909.
135. Growing better gems. By James Troop and C. C. Woodbury. June, 1909.
136. Steer feeding: IV, Winter steer feeding, 1908–9. By J. H. Skinner and W. A. Cochel. Oct., 1909.
137. Dairy by-products as supplements to corn for fattening hogs. By J. H. Skinner and W. A. Cochel. Nov., 1909.
138. The San José scale: Some sprays for its control. By C. G. Woodbury. Feb., 1910.
139. Results of cooperative tests of varieties of corn, wheat, oats, soy beans, and cowpeas, 1909. By A. T. Wiancko and C. O. Cromer. Feb., 1910. See 149.
140. Hog cholera. By R. A. Craig and H. H. Madaus. Mar., 1910.
141. Concentrated commercial feeding stuffs. By W. J. Jones, jr. [and others]. Apr., 1910.
142. Steer feeding: V, Finishing steers, 1907–1909. By J. H. Skinner and W. A. Cochel. May, 1910.
143. Standards for evaporated milk, sweetened condensed milk and condensed skim milk. Federal and State dairy laws. By O. F. Hunziker. May, 1910. Also popular edition.
144. Growing tomatoes for the canning factory. By James Troop, C. G. Woodbury, and J. G. Boyle. May, 1910. Revised edition. Feb., 1911.
145. Testing cream for butter fat. By O. F. Hunziker [and others]. June, 1910. Popular edition, Oct., 1910.
146. Steer feeding: VI, Influence of age on the economy and profit of feeding calves, yearlings, and 2-year-olds, 1906–7, 1907–8, and 1908–9. By J. H. Skinner and W. A. Cochel. June, 1910.
147. Corn silage for winter feeding of ewes and young lambs. [Sheep feeding, I.] By J. H. Skinner and W. W. Smith. June, 1910.
148. Commercial fertilizers. By W. J. Jones, jr., E. G. Proulx and C. W. Rice. June, 1910.
149. Summary of five years' results of cooperative tests of varieties of corn, wheat, oats, soy beans, and cow-peas, 1906–1910. By A. T. Wiancko and C. O. Cromer. Mar., 1911. Summarizes results published in detail in 117, 124, 132, 139.
150. Why do cream tests vary? factors affecting richness of cream; relation of butter fat to butter. By O. F. Hunziker. May, 1911. Revised edition, Aug., 1914.
151. Commercial fertilizers. By W. J. Jones, jr. [and others]. May, 1911.
152. Commercial feeding stuffs. By W. J. Jones, jr., F. D. Fuller, and C. Cutler. June, 1911.
153. Steer feeding: VII, Winter steer feeding, 1909–10 and 1910–11. By J. H. Skinner, F. G. King, and H. P. Rusk. Sept., 1911. Also popular edition, June, 1912.
154. Orchard heating. By C. G. Woodbury and J. W. Wellington. Oct., 1911. Also popular edition.
155. Results of cooperative fertilizer tests on clay and loam soils. By J. B. Abbott and S. D. Conner. Apr., 1912.
156. Commercial fertilizers. By W. J. Jones, jr. [and others]. Apr., 1912.
157. Unproductive black soils. By S. D. Conner and J. B. Abbott. May, 1912.
158. Hominy feed for fattening hogs. By J. H. Skinner and F. G. King. May, 1912.
159. Moisture control of butter: I, Factors not under the control of the buttermaker. By O. F. Hunziker, H. C. Mills, and George Spitzer. Nov., 1912.
160. Moisture control of butter: II, Conditions under control of the buttermaker; methods of moisture control: factors which influence the per cent of moisture found in butter after manufacture. By O. F. Hunziker, H. C. Mills, and George Spitzer. Nov., 1912.
161. Commercial feeding stuffs. By W. J. Jones, jr. [and others]. Aug., 1912.
162. Fattening western lambs 1910–11 and 1911–12. [Sheep feeding, II]. By J. H. Skinner and F. G. King. Nov., 1912.
163. Steer feeding: VIII, Winter steer feeding, 1911–12. By J. H. Skinner and F G. King. Nov., 1912. Also popular edition.
164. Strawberries. By Joseph Oskamp. Mar., 1913. Also popular edition.
165. Tomato investigations: I, Introduction and cultural methods. By J. G. Boyle.—II, Fertilization. By J. B. Abbott. Apr., 1913. Also popular edition.
166. Commercial fretilizers. By W. J. Jones, jr. [and others]. May, 1913.
167. Steer feeding: IX, Winter steer feeding 1912–13. By J. H. Skinner and F. G. King. Oct., 1913. Also popular edition.

168. Fattening western lambs, 1912–13. [Sheep feeding, III.] By J. H. Skinner and F. G. King. Nov., 1913.
169. Commercial feeding stuffs. By W. J. Jones, jr. [and others]. Aug., 1913.
170. The reclamation of an unproductive soil of the Kankakee marsh region: Soil acidity, nitrification, and the toxicity of soluble salts of aluminum. By J. B. Abbott, S. D. Conner, and H. R. Smalley. Dec., 1913. Also popular edition.
171. The vegetable garden. By J. G. Boyle. Feb., 1914.
172. Soybeans and cowpeas. By A. T. Wiancko, M. L. Fisher, and C. O. Cromer. Mar., 1914. Includes results reported in 120.
173. Hog cholera. By R. A. Craig and R. A. Whiting. Mar., 1914.
174. Commercial fertilizers. By W. J. Jones, jr. [and others]. Apr., 1914.
175. Composition of maize at various stages of its growth. By W. J. Jones, jr., and H. A. Huston. Apr., 1914.
176. Wild garlic and its eradication. By F. J. Pipal. Aug., 1914.
177. Commercial feeding stuffs. By W. J. Jones, jr. [and others]. Aug., 1914.
178. Cattle feeding: X, Winter steer feeding, 1913–14. By J. H. Skinner and F. G. King. Nov., 1914. Also popular edition.
179. Sheep feeding: IV, Fattening western lambs, 1913–14. By J. H. Skinner and F. G. King. Nov., 1914. Also popular edition.
180. Commercial fertilizers. By W. J. Jones, jr. [and others]. May, 1915.
181. Commercial feeding stuffs. By W. J. Jones, jr. [and others]. Aug., 1915.
182. Poultry investigations: I, The value of meat scrap, fish scrap, and skim milk in rations for laying pullets. By A. G. Philips. Nov., 1915. Also popular edition.
183. Cattle feeding: XI, Winter steer feeding, 1914–15. By J. H. Skinner and F. G. King. Nov., 1915. Also popular edition.
184. Sheep feeding: V, Fattening western lambs, 1914–15. By J. H. Skinner and F. G. King. Nov., 1915. Also popular edition.
185. The false cabbage aphis (*Aphia pseudobrassicae* Davis). By J. J. Davis and A. F. Satterthwait. May, 1916. Also popular edition.
186. Commercial fertilizers. By W. J. Jones, jr. [and others]. May, 1916.
187. Acid phosphate versus raw rock phosphate as fertilizer. By A. T. Wiancko and S. D. Conner. June, 1916.
188. Cooling cream on the farm. By O. F. Hunziker, H. C. Mills, and H. B. Switzer. June, 1916.
189. Cream testing balances. By O. F. Hunziker, George Spitzer, and G. L. Ogle. July, 1916.
190. Commercial feeding stuffs. By W. J. Jones, jr. [and others]. Aug., 1916.
191. Cattle feeding: XII, Winter steer feeding, 1915–16. By J. H. Skinner and F. G. King. Sept., 1916. Also popular edition.
192. Sheep feeding: VI, Fattening western lambs, 1915–16. By J. H. Skinner and F. G. King. Sept., 1916. Also popular edition.
193. Skim milk and milk substitutes for calf feeding. By O. F. Hunziker and R. E. Caldwell. Sept., 1916.
194. The Indiana farm orchard: Operating costs and methods. By C. G. Woodbury, M. W. Richards, and H. J. Reed. Sept., 1916.
195. Temperature experiments in incubation. By A. G. Philips. Dec., 1916. Also popular edition.
196. Cost of raising Leghorn pullets. By A. G. Philips. Dec., 1916. Also pouplar edition.
197. Red sorrel and its control (*Rumex acetosella* L.), By F. J. Pipal. Dec., 1916.
198. Summaries of soil fertility investigations. By A. T. Wiancko and S. C. Jones. Mar., 1917.
199. Commercial fertilizers. By W. J. Jones, jr. [and others]. Apr., 1917.
200. Strawberry varieties and cultural hints. By Joseph Oskamp. July, 1917.
201. Varieties of blackberries and raspberries with notes on their care. By Joseph Oskamp. Aug., 1917.
202. Sheep feeding: VII, Fattening western lambs, 1916–17. By J. H. Skinner and F. G. King. Aug., 1917. Also popular edition.
203. Test of three protein concentrates and two leguminous roughages in milk production. By O. F. Hunziker and R. E. Caldwell. Aug., 1917.
204. Experimental studies in hog cholera. By R. A. Craig and R. A. Whiting. Aug., 1917.
205. Soil management investigations in a young apple orchard. By C. G. Woodbury, H. A. Noyes, and Joseph Oskamp. Sept., 1917.
206. Cattle feeding: XIII, Winter steer feeding, 1916–17. By J. H. Skinner and F. G. King. Sept., 1917 Also popular edition.
207. Gooseberries and currants. By Joseph Oskamp. Aug., 1917.
208. The pasteurization of sour, farm-skimmed cream for buttermaking. By O. F. Hunziker, George Spitzer, H. C. Mills, and H. B. Switzer. Sept., 1917.
209. Commercial feeding stuffs. By W. J. Jones, jr. [and others]. Oct., 1917.
210. The value of phosphates on Indiana soils. By A. T. Wiancko and S. C. Jones. Feb., 1918. Revised Mar., 1922.
211. Records from a Purdue farm flock. By A. G. Philips. Mar., 1918.
212. Plums and cherries. By Joseph Oskamp. Mar., 1918.
213. The value of lime on Indiana soils. By A. T. Wiancko, S. D. Conner, and S. C. Jones. Mar., 1918. Revised Feb., 1922.
214. Cost of raising white Plymouth rocks. By A. G. Philips. Apr., 1918.
215. Commercial fertilizers. By E. G. Proulx [and others]. May, 1918.
216. Commercial feeds registered for sale in Indiana, May 1, 1918. By E. G. Proulx [and others]. May, 1918.
217. Commercial feeding stuffs. By E. G. Proulx [and others]. Aug., 1918.
218. The value of skim milk and meat scraps for white Plymouth rocks. By A. G. Philips. Aug., 1918.
219. Swine feeding: Feeding trials with corn by-products, palmo midds, and commercial mixed hog feeds, 1917–18. By J. H. Skinner and C. G. Starr. Sept., 1918.
220. Cattle feeding: XVI, Winter steer feeding, 1917–18. By J. H. Skinner and C. G. Starr. Sept., 1918. Also popular edition.
221. Sheep feeding: VIII, Fattening western lambs, 1917–18. By J. H. Skinner and C. G. Starr. Sept., 1918. Also popular edition.
222. The value of manure on Indiana soils. By A. T. Wiancko and S. C. Jones. Sept., 1918.
223. So-called medicinal hog cholera remedies and cures. By C. H. Clink and D. B. Clark. Sept., 1918.
224. Selection of disease-free seed corn. By G. N. Hoffer and J. R. Holbert. Sept., 1918.
225. Spring small grains in Indiana. By A. T. Wiancko and C. O. Cromer. Jan., 1919.
226. The value of legumes on Indiana soils. By A. T. Wiancko, S. D. Conner, and S. C. Jones. Jan., 1919.
227. Feeding experiments with Leghorns. By A. G. Philips. June, 1919.
228. Commercial feeding stuffs. By E. G. Proulx [and others]. May, 1919.
229. Commercial fertilizers. By E. G. Proulx [and others]. May, 1919.
230. Commercial feeding stuffs: Quarterly report, Jan. 1, 1919–Mar. 31, 1919. By E. G. Proulx [and others]. July, 1919.

231. Commercial feeding stuffs: Quarterly report, Apr. 1, 1919–June 30, 1919. By E. G. Proulx [and others]. Sept., 1919.
232. Commercial feeding stuffs: Quarterly report, July 1, 1919–Sept. 30, 1919. By E. G. Proulx [and others]. Sept. 30, 1919.
233. Disease-free sweet corn seed. By G. N. Hoffer. Jan., 1920.
234. Sheep feeding. Fattening western lambs, 1918–19. By J. H. Skinner and C. M. Vestal. Sept., 1919. Also popular edition.
235. Corn silage, the keystone of economical cattle feeding. By J. H. Skinner and F. G. King. Feb., 1920.
236. The modified rag doll and germinator box. By B. H. Duddleston. Feb., 1920.
237. Ground soy beans for fattening cattle. By F. G. King. Mar., 1920. Revised Dec., 1922.
238. Soy beans in Indiana. By A. T. Wiancko and C. O. Cromer. Mar., 1920.
239. Borax in fertilizers: I, Borax injury to corn; II, American versus German potash salts. By S. D. Conner and E. N. Fergus. Feb., 1920.
240. Cattle feeding: XV, Winter steer feeding, 1918–19. By J. H. Skinner and C. M. Vestal. Sept., 1919. Also popular edition.
241. Commercial fertilizers. By E. G. Proulx [and others]. May, 1920.
242. Commercial feeding stuffs: Quarterly report, Oct. 1, 1919–Dec. 31, 1919. By E. G. Proulx [and others]. May, 1920.
243. Commercial feeding stuffs: Quarterly report, Jan. 1, 1920–Mar. 31, 1920. By E. G. Proulx [and others]. July, 1920.
244. A comparison of methods for estimating fat in butter. By H. W. Gregory, P. S. Lucas, and George Spitzer. June, 1920.
245. Value of alfalfa hay for fattening cattle. By J. H. Skinner and F. G. King. June, 1920.
246. The efficiency of milk substitutes in calf feeding. By George Spitzer and R. H. Carr. June, 1920.
247. Bees and their relation to arsenical sprays at blossoming time. By W. A. Price. July, 1920.
248. Orchard cover crops. By Joseph Oskamp. July, 1920.
249. Cattle feeding: Winter steer feeding 1919–20. By J. H. Skinner and F. G. King. Sept., 1920. Also popular edition.
250. Selecting and saving tomato seed. By W. S. Huelson. July, 1920.

IOWA.

Iowa Agricultural Experiment Station, Ames.

BULLETINS.

1. Organization and plans. By R. P. Speer.—Notes on crossing. By A. A. Crozier. May, 1888.
2. Corn tassels, silks, and blades. By R. P. Speer and F. W. Mally.—Proposed line of chemical work: Fodder. By G. E. Patrick.—Grasses and other forage plants. By A. A. Crozier.—A few important chinch bug remedies: arsenic experiments. By C. P. Gillette.—Promising new cherries. By J. L. Budd. Sept., 1888.
3. Characteristics of hardy and tender fruit trees. By R. P. Speer.—Chinch-bug diseases. By C. P. Gillette.—Some injurious fungi. By A. A. Crozier.—Promising new pears. By J. L. Budd.—Promising grasses of the northwestern territories. By John Craig.—Analysis of apples. By G. E. Patrick.—The work in crossing. By A. A. Crozier. Nov., 1888.
4. Wild plums. By R. P. Speer.—A chemical study of apple twigs. By G. E. Patrick.—An investigation of apple twigs. By B. D. Halstead.—Propagation of trees and shrubs from cuttings. By John Craig. Some suggestions concerning the corn root worm. By Herbert Osborn. Feb., 1889.
5. Sorghum. By G. E. Patrick.—Important injurious insects. By C. P. Gillette. May, 1889.
6. Experiment station wheat and oats in 1889. By R. P. Speer.—Feeding experiments: Comparison of fodders and rations in fattening steers. By G. E. Patrick and L. P. Smith.—Food habits of the striped prairie squirrel. By C. P. Gillette. Aug., 1889.
7. Experiments with corn: the millets: sugar experiments. By R. P. Speer.—Codling moth experiments; new Gynipidae: the hog louse. By C. P. Gillette.—The college vineyard. By J. L. Budd. Nov., 1889.
8. Iowa station milk test; sweet cream butter; sugar beets; sorghum. By G. E. Patrick.—Annual report. By [R. P. Speer.] Feb., 1890.
9. Comparative value of fodder plants. By R. P. Speer.—The Iowa station milk test: A correction: the relative value plan at creameries. By G. E. Patrick.—The plum curculio and the plum gouger. By C. P. Gillette. May, 1890.
10. Our rusted and blighted wheat, oats, and barley in 1890. By R. P. Speer.—Experiments with arsenites. By C. P. Gillette.—Stocks for the cherry, plum, prune, and apricot. By J. L. Budd.—A chemical study of blue grass. By C. M. Wade.—Corn fodder. By R. P. Speer. Aug., 1890.
11. Experiments in making and storing hay. By R. P. Speer.—Cultivated and wild varieties of the grasses in Iowa. By R. P. Speer, C. M. Wade, and G. E. Patrick.—Creamery and dairy notes. By G. E. Patrick.—The potato-stalk weevil; apple curculio, and a new currant borer: kerosene emulsion as a sheep dip and as a destroyer of parasites upon domestic animals. By C. P. Gillette.—Third annual report, 1890. By R. P. Speer. Nov., 1890.
12. Experiments with potatoes in 1889–90. By R. P. Speer.—Sugar beets. By G. E. Patrick and E. N. Eaton.—Sorghum. By G. E. Patrick.—Relative value table for milk: A notice.—Notes and experiments upon injurious insects and insecticides. By C. P. Gillette.—A feeding experiment. By R. P. Speer.—Index to Volume I, Bulletins 1–12. Feb., 1891.
13. Introduction. By James Wilson.—Experiment in feeding for milk. James Wilson [and others].—[Botanical articles]: Treatment of fungus diseases: [weed pests. By L. H. Pammel.]—Preliminary report on the examination of some seeds. By P. H. Rolfs.—Notes on methods of cross-pollination. By F. A. Sirrine.—[Summary of botanical articles.—Some insects destructive to grass By Herbert Osborn.—Blossoms of the orchard fruits: Their relative hardiness. By J. L. Budd.—Some observations on contaminated water supply for live stock. By M. Stalker. May, 1891.
14. Effect of feed upon the quality of milk; calf feeding experiment: a feeding experiment for milk; hog experiment No. 1. By James Wilson, C. F. Curtiss, D. A. Kent, and G. E. Patrick.—Reports of entomological work. By Herbert Osborn and H. A. Gossard.—Breeding of the orchard and garden fruits.—An aphthous affection among dairy cows of the State. By M. Stalker. Aug., 1891.
15. Sugar beet growing. By James Wilson, C. F. Curtiss, D. A. Kent, and G. E. Patrick.—Sugar beets in Iowa, 1891. By G. E. Patrick, E. N. Eaton, and D. B. Bisbee.—Fungus diseases of sugar beet. By L. H. Pammel.—Reports on injurious insects. By Herbert Osborn and H. A. Gossard.—Soiling experiment. By James Wilson, C. F. Curtiss, D. A. Kent, and G. E. Patrick.—Time of sowing grass seed: winter wheat: best varieties of oats. By James Wilson, C. F. Curtiss, and D. A. Kent.—Fertilizers. By James Wilson. Nov., 1891.

16. **Flaxseed meal and oil meal.** By James Wilson, C. F. Curtiss, and D. A. Kent.—Crop report of the farm department. By D. A. Kent.—Varieties of potatoes. By C. F. Curtiss.—Corn growing. By C. F. Curtiss.—Experiments with fungicides. By L. H. Pammel.—What to plant on the home grounds. By J. L. Budd.—Hints for beginners in dairying. By F. A. Leighton.—Lice affecting domestic animals. By Herbert Osborn.—Sugar beets. By G. E. Patrick. Feb., 1892.
17. **Feeding beets and potatoes for butter.** By James Wilson, D. B. Bisbee, and F. A. Leighton.—Feeding lambs. By C. F. Curtiss.—Winter feeding of hogs.—Feeding milk. By James Wilson and G. E. Patrick.—Sugar beets in Iowa, 1891. By G. E. Patrick, E. N. Eaton, and D. B. Bisbee.—Treatment of some fungus diseases: Experiments made in 1891. By L. H. Pammel.—Effects of spraying on plants and fruit, and notes on insects. By Herbert Osborn.—Ergotism again. By M. Stalker. May, 1892.
18. **Experiments with sheep.** By James Wilson and C. F. Curtiss.—Feeding colts. By James Wilson and C. F. Curtiss.—Sweet vs. sour cream butter. By G. E. Patrick, F. A. Leighton, and D. B. Bisbee.—Diseases of plants common to Iowa cereals. By L. H. Pammel.—Reports on injurious insects. By Herbert Osborn and H. A. Gossard.—The apple trees and apple crop on the college farm. By J. L. Budd.—A separating experiment. By F. A. Leighton and H. C. Wallace.—Experimental creamery, Iowa State Agricultural College. By D. A. Kent.—Rainfall. By E. N. Eaton. Aug., 1892.
19. **Experiments with new orchard fruits, trees, and plants.** By J. L. Budd.—Report of experiments and studies in entomology. By Herbert Osborn, H. A. Gossard, and F. A. Sirrine.—On the crossing of cucurbits. By L. H. Pammel.—Root crops. By James Wilson and C. F. Curtiss.—Corn growing. By C. F. Curtiss.—Depth of covering grass seed. By James Wilson and C. F. Curtiss.—Winter wheat. By James Wilson and C. F. Curtiss.—Calf feeding. By C. F. Curtiss. Hog feeding: [Experiments feeding buttermilk]. By D. A. Kent and O. C. Van Houten.—Soiling crops. By James Wilson, C. F. Curtiss, and W. H. Heileman.—Hints on cheese making. By G. L. McKay.—An automatic acid measure. By G. E. Patrick. Nov., 1892.
20. **Steer feeding.** By James Wilson and C. F. Curtiss.—Sugar beets in Iowa, 1892. By G. E. Patrick, W. H. Heileman, and E. N. Eaton.—Machinery and methods of spraying. By Herbert Osborn, and L. H. Pammel.—Grass-leaf hoppers. By Herbert Osborn.—Treatment of spot diseases of the cherry and currants and potato blight. By L. H. Pammel.—Prevention of corn and oats smut. By L. H. Pammel and F. C. Stewart.—Experiments with mallein. By W. B. Niles.—Rainfall record. By E. N. Eaton and E. S. King. Feb., 1893.
21. **Investigations in cheese making.** By H. C. Wallace.—Feeding colts. By C. F. Curtiss.—Shrinkage of wool. By C. F. Curtiss.—When to cut corn. By D. A. Kent, G. E. Patrick, E. N. Eaton, and W. H. Heileman.—Sweet versus ripened cream butter. By G. E. Patrick, F. A. Leighton, and W. H. Heileman.—An aromatic bacillus of cheese. By L. H. Pammel.—Some bacteriological work in the dairy. By L. H. Pammel.—The impurities of clover seed. By F. C. Stewart. 1893.
22. **A study in churning.** By H. C. Wallace.—Composite samples at the creamery: [Size of samples], chromate preservatives. By G. E. Patrick.—Rennet extracts of commerce. By G. E. Patrick.—The use of sand cherries for stocks. By J. L. Budd and N. E. Hansen.—Rose hybrids. By J. L. Budd and N. E. Hansen. 1893.
23. **Soiling.** By James Wilson.—A study of ripening corn. By C. F. Curtiss and G. E. Patrick.—Notes on injurious insects. By Herbert Osborn and F. A. Sirrine.—Results of crossing cucurbits. By L. H. Pammel.—Notes on a few common fungus diseases. By L. H. Pammel.—Sugar beets in Iowa, 1893. By G. E. Patrick and O. H. Pagelsen.—Rainfall record. By W. H. Heileman. 1893.
24. **Steer and heifer beef.** By James Wilson and C. F. Curtiss.—Changes during cheese ripening. By G. E. Patrick.—Experiments with fungicides: Spraying to prevent oats and wheat rust; a third season's experiment in treating spot diseases of currants. By L. H. Pammel.—Experiments in treating oats with different chemicals and hot water. By F. C. Stewart and L. H. Pammel.—Corn insects: Their injuries and how to treat them. By Herbert Osborn.—Index to Volume II, Bulletins 13–24. 1894.
25. **Feeding winter dairy cows.** By James Wilson.—Calf feeding. By C. F. Curtiss.—Specific gravity and weight of wheat seeds. By L. H. Pammel and F. C. Stewart.—Report on separators. By H. C. Wallace.—Creaming by gravity. By F. L. Kent.—Corn meal vs. grass with stock steers. By D. A. Kent.—Actinomycosis and the iodide treatment. By W. B. Niles.—Rainfall record. By W. H. Heileman. 1894.
26. The Russian thistle. By James Wilson, L. H. Pammel, G. E. Patrick, and J. L. Budd. 1894. See 38.
27. **Soiling crops, 1894; growing turnips.** By James Wilson.—Construction and ventilation of dairy barns; experimental crop notes for 1894. By C. F. Curtiss.—Potato scab and its prevention; rutabaga rot. By L. H. Pammel.—Observations on insects, season of 1894. By Herbert Osborn and C. W. Mally.—Best ferns for the north and northwest. By G. W. Carver. 1895.
28. **Angus and short-horn feeding experiment.** By James Wilson and C. F. Curtiss.—Feeding cotton seed and other meal to hogs. By C. F. Curtiss.—Sugar beets in Iowa. By G. E. Patrick.—Two noxious weeds in Iowa; poisoning from cowbane. By L. H. Pammel.—Second report on the sand cherry as a stock for the plum and cherry. By J. L. Budd and N. E. Hansen.—Test of dairy salts. By F. L. Kent and E. A. Leighton.—Churning record of the college creamery.—Rainfall record. By W. H. Heileman. 1895.
29. **Investigation of bovine tuberculosis, with special reference to its existence in Iowa.** By M. Stalker and W. B. Niles. 1895.
30. **Treatment of currants and cherries to prevent spot diseases.** By L. H. Pammel and G. W. Carver.—Squirrel-tail grass, or wild barley. By L. H. Pammel.—The chemical composition of squirrel-tail grass. By J. B. Weems and W. H. Heileman. 1895.
31. **Experiments with new orchard fruits, trees, and shrubs.** By J. L. Budd. 1895.
32. **Entomological work for 1895.** By Herbert Osborn and C. W. Mally.—Feeding dairy cows. By James Wilson.—Feeding cotton seed meal to dairy cows; maturing skim-milk calves; crop notes, 1895. By C. F. Curtiss.—Butter flavor. By G. L. McKay.—Some of our advances in breeding fruits and shrubs. By J. L. Budd and N. E. Hansen.—Milk preservatives: Formalin; soil moisture, 1895. By J. B. Weems and W. H. Heileman.—Our window gardens. By G. W. Carver. 1896.
33. **Lamb feeding.** By James Wilson and C. F. Curtiss.—Steer and heifer beef. By James Wilson and C. F. Curtiss.—Old process vs. new process linseed meal. By James Wilson and C. D. Reed.—Notes on injurious insects. By Herbert Osborn.—Fresh cows vs. stripper butter. By G. L. McKay and C. H. Eckles. 1896.
34. **Studies of the life histories of grass-feeding Jassidae.** By Herbert Osborn and E. D. Ball.—Weeds of the mustard family. By L. H. Pammel.—Notes on dairy bacteriology. By L. H. Pammel and I. J. Mead.—Home propagation. By J. L. Budd.—Crop notes 1896. By C. F. Curtiss. 1897.
35. **Lamb feeding: II, fattening range lambs.** By C. F. Curtiss and J. W. Wilson.—Raising calves on separator milk. By C. F. Curtiss.—Hog cholera and swine plague: diseases of sheep as observed in Iowa. By W. B. Miles.—Quick and slow ripening of cream. By G. L. McKay and C. H. Eckles. 1897.

36. Soil moisture. By J. B. Weems and J. J. Edgerton.—Some botanical studies on corn. By L. H. Pammel and Robert Combs.—Seed testing. By C. R. Ball.—Leaf-spot disease of alfalfa. By Robert Combs.—The San José scale. By Herbert Osborn.—Fresh vs. stripper cow butter. By G. L. McKay and J. W. Wilson.—Our hybrid roses, gooseberries, and strawberries. By J. L. Budd.—Index to Volume III, Bulletins 25-36, inclusive. 1897.
37. Sugar beet investigations, 1897. By C. F. Curtiss and James Atkinson. 1898.
38. The Russian thistle. By L. H. Pammel. 1898. [A revision of 26.]
39. Weeds of corn fields. By L. H. Pammel. 1898.
40. The relation of acid fermentation to butter flavor and aroma. By C. H. Eckles. 1899.
41. Some reports from trial stations on new orchard fruits and shrubs. By J. L. Budd. 1899.
42. Horse nettle as a troublesome weed in Iowa; two other troublesome weeds. By L. H. Pammel.—Potato scab. By C. R. Ball. 1899.
43. Some injurious scale insects. By Wilmon Newell. 1899.
44. Observations and suggestions on root killing of fruit trees. By John Craig. Feb., 1900.
45. Field experiments with corn, oats, barley, wheat, brome grass, rape, sorghum, soy beans, cowpeas, and sugar beets. By James Atkinson. Feb., 1900.
46. Facts and opinions about plums and plum growing in Iowa. By John Craig. Mar., 1900.
47. Notes on vegetables: Cucumbers, eggplants, lima beans, sweet potatoes, tomatoes, and peppers. By John Craig. Mar., 1900.
48. Economical production of beef; a study of pork production; fattening range lambs; fattening lambs in comparison with yearlings. By C. F. Curtiss and J. A. Craig. June, 1900
49. Miscellaneous insects. By H. E. Summers. June, 1900.
50. Insecticide methods. By H. E. Summers. June, 1900.
51. Winter wheat. By James Atkinson. Aug., 1900.
52. Cream testing. By C. H. Eckles.—Influence of certain conditions in churning on the amount of water in butter; a study of butter increasers.—By J. B. Weems and F. W. Bouska. Sept., 1900.
53. The asparagus rust in Iowa. By L. H. Pammel and E. R. Hodson. Nov., 1900.
54. Grasses. By L. H. Pammel, J. B. Weems, and Frank Lamson-Scribner. Jan., 1901.
55. Field experiments. By James Atkinson. Feb., 1901.
56. Pastures and meadows of Iowa. By L. H. Pammel, J. B. Weems, and Frank Lamson-Scribner. Mar., 1901.
57. Experiments in curing cheese. By G. L. McKay. Apr., 1901.
58. Parturient paralysis and the Schmidt treatment. By J. J. Repp.—List of bulletins published by the Iowa Experiment Station. Apr., 1901.
59. A bacteriological study of the college creamery milk supply; a case of putrid butter. By C. H. Eckles.—Purification of milk by the centrifugal separator. By C. H. Eckles and S. E. Barnes. Aug., 1901.
60. The Aphididae of North America. By W. D. Hunter. Sept., 1901.
61. Miscellaneous notes on fungus diseases of plants; the Canadian thistle and dandelion. By L. H. Pammel.—A few of the common fleshy fungi of Ames. By Alice W. Hess. July, 1902.
60. [i. e. 62]. A study on the germination and growth of Leguminosae, especially with reference to small and large seed. By F. G. Miller and L. H. Pammel. Dec., 1901.
63. Sheep-feeding experiments. By W. J. Kennedy and F. R. Marshall. May, 1902.
64. Notes on strawberries. By H. C. Price and E. E. Little. May, 1902.
65. The results of a swine feeding experiment. By W. J. Kennedy and F. R. Marshall. Aug., 1902.
66. The results of a cattle feeding test. By W. J. Kennedy and F. R. Marshall. Aug., 1902.
67. The chemical composition of food preservatives. By J. B. Weems and I. J. Mead.—Solutions for testing cream and milk. By J. B. Weems and C. E. Gray. Nov., 1902.
68. Selecting and preparing seed corn. By P. G. Holden, W. H. Stevenson, Alfred Atkinson, and W. H. Olin. Apr., 1903.
69. The chicken mite. By J. J. Repp. June, 1903.
70. Some weeds of Iowa. By L. H. Pammel.—Index to volume six. Dec., 1903. Also popular edition.
71. The keeping quality of butter. By G. L. McKay and Carl Larsen. July, 1903.
72. Cold storage of apples. By H. C. Price. Oct., 1903.
73. Cherries and cherry growing in Iowa. By H. C. Price and E. E. Little. Aug., 1903.
74. Breakfast foods. By J. B. Weems and C. E. Ellis. Jan., 1904. Also popular edition.
75. The feeding value of soft corn for beef production. By W. J. Kennedy, Wayne Dinsmore, W. J. Rutherford, and W. W. Smith. Mar., 1904.
76. The moisture content of butter and methods of controlling it. By G. L. McKay and Carl Larsen. Mar., 1904.
77. Selecting and preparing seed corn. By P. G. Holden. Apr., 1904. Revised edition. Dec., 1905.
78. Drainage conditions in Iowa. By W. H. Stevenson and G. I. Christie.—Notes and Tables on drainage engineering. By L. E. Ashbaugh. May, 1904.
79. Experiments in beef production. By W. J. Kennedy, Wayne Dinsmore, W. J. Rutherford and W. W. Smith. Sept., 1904. Also popular edition.
80. Report of the Iowa educational butter contest; salt in butter. By G. L. McKay and Carl Larsen. Dec., 1904.
81. Experiment in beef production. By W. J. Kennedy, Wayne Dinsmore, W. J. Rutherford, and W. W. Smith. Apr., 1905.
82. The principal soil areas of Iowa. By W. H. Stevenson, G. I. Christie, and O. W. Willcox. May, 1905. Second edition. Jan., 1911.
83. Quack and wheat grasses: Some soil-binding grasses of Iowa. By L. H. Pammel. July, 1905. Also popular edition.
84. The cedar apple fungi and apple rust in Iowa. By L. H. Pammel. Aug., 1905. Also pouplar edition.
85. Spraying calendar. By S. A. Beach and E. E. Little. Apr., 1906.
86. Investigation of concentrated commercial feed stuffs as sold in Iowa. By L. G. Michael. Jan., 1907.
87. Condimental stock foods and tonics. By L. G. Michael and H. O. Buckman. Jan., 1907.
88. The vitality, adulteration and impurities of clover, alfalfa and timothy seed for sale in Iowa in 1906. By L. H. Pammel, R. E. Buchanan, and Charlotte M. King. Jan., 1907. Also popular edition.
89. Spraying calendar: Horticulture section. By S. A. Beach and E. E. Little.—Farm crops section. By M. L. Bowman. Mar., 1907.
90. Evergreens for the Iowa planter. By A. T. Erwin and H. P. Baker. Apr., 1907.
91. Experiments in swine feeding: The value of corn and supplementary feeds for pork production. By W. J. Kennedy and E. T. Robbins. June 1907. Also popular edition.
92. Tuberculosis in swine: The comparative effects of infected and pasteurized skim milk when fed to healthy pigs. By W. J. Kennedy, E. T. Robbins and F. W. Bouska. June, 1907. Also popular edition.
93. Comparative values of alcohol and gasoline for light and power. By J. B. Davidson and M. L. King. June, 1907.
94. A new soil sampler. By W. H. Stevenson. Jan. 1908.

95. The maintenance of fertility with special reference to the Missouri loess. By W. H. Stevenson, I. O. Schaub, and A. H. Snyder. Mar., 1908.
96. Oats. By M. L. Bowman and L. C. Burnett. Mar., 1908.
97. Methods of determining the moisture content of butter. By G. L. McKay and John Bower. June, 1908.
98. Clover growing on the loess and till soils of southern Iowa. By W. H. Stevenson and E. B. Watson. June, 1908.
99. Results of seed investigations for 1907. By L. H. Pammel and Charlotte M. King. June, 1908. Also popular edition.
100. Modern silo construction. By J. B. Davidson and M. L. King. July, 1908. Revised edition, July, 1909.
101. A study of moisture in butter. By G. L. McKay and John Bower. Oct., 1908
102. The lesser apple leaf folder. By R. L. Webster. Mar., 1909.
103. The use of starters in butter making. By F. W. Bouska. Mar.,1909.
104. Some plant diseases of 1908. By L. H. Pammel and Charlotte M. King. July, 1909.
105. Notes on eradication of weeds, with experiments made in 1907 and 1908. By L. H. Pammel and Charlotte M. King. July, 1909.
106. Preparation of corn for hogs. By W. J. Kennedy and E. T. Robbins. Sept., 1909.
107. Tuberculosis and its detection: [The detection of tuberculosis.]. By C. H. Stange.—Transmission of tuberculosis from cattle to hogs. By W. J. Kennedy and Wayne Dinsmore. Oct., 1909.
108. Cold storage for Iowa apples. By S. A. Beach and H. J. Eustace. Sept., 1909. Also popular edition.
109. The value of corn, oil meal, cottonseed meal, and gluten feed in work horse rations. By W. J. Kennedy, E. T. Robbins, and H. H. Kildee. Mar., 1910.
110. Roots and corn silage for fattening lambs. By W. J. Kennedy, E. T. Robbins, and H. H. Kildes. Feb., 1910.
111. The apple leaf hopper. By R. L. Webster. Mar., 1910. Also popular edition.
112. The influence of feeding sugar beets and mangels to breeding animals, with special reference to the formation of renal and urinary calculi. By L. G. Michael and others. Mar., 1910. Also popular edition.
113. Influence of condimental stock foods on the digestibility of a corn ration fed to swine. By L. G. Michael [and others]. Mar., 1910. Also popular edition.
114. Plum varieties. By E. E. Little. Apr., 1910. Also popular edition.
115. Results of seed investigations for 1908 and 1909. By L. H. Pammel and Charlotte M. King. June, 1910.
116. Two barley blights, with comparison of species of *Helminthosporium* upon cereals. By L. H. Pammel, Charlotte M. King, and A. L. Bakke. June, 1910.
117. The Iowa silo. By J. B. Davidson and M. L. King. June 1910. Revision of 100. See 141.
118. Lacto: A new and healthful frozen dairy product. By Martin Mortensen and John Gordon. Jan., 1911.
119. The gumbo soils of Iowa. By W. H. Stevenson and J. F. Barker. Jan., 1911.
120. The hardy catalpa in Iowa. By C. A. Scott. Feb., 1911.
121. Creamery bookkeeping. By Martin Mortenson. Feb., 1911.
122. The wheat-head army worm as a timothy pest. By R. L. Webster. Feb., 1911. Also popular edition.
123. Classification of ice cream and related frozen products. Score card for ice cream judging. By Martin Mortenson. May, 1911.
124. A centrifugal method for the determination of humus. By A. A. Wells, W. H. Stevenson, and W. F. Coover. May, 1911.
125. Trussing and boning chicken for fancy trade. By W. A. Lippincott. Oct., 1911.
126. Planting and adorning the farmstead. By A. T. Erwin. Feb., 1912.
127. Spraying practice for orchard and garden. By S. A. Beach. Feb., 1912. Three editions the third being issued as Iowa State Col. Agr. Ext. Bul. 35 (1915).
128. Some data for oat growers. By L. C. Burnett. Mar., 1912.
129. Orchard heating. By Laurenz Greene. Mar., 1912.
130. The pear slug (*Caliroa cerasi* Linn.). By R. L. Webster. Mar., 1912. Also popular edition.
131. Four new fungus diseases in Iowa. By L. H. Pammel and Charlotte M. King. Apr., 1912.
132. Farm poultry houses. By J. B. Davidson and W. A. Lippincott. June, 1912.
133. Growing winter wheat in Iowa. By L. C. Burnett. July, 1912.
134. Bacteria and ice cream. By B. W. Hammer. July, 1912.
135. The germination test of seed corn. By H. D. Hughes. Feb., 1913.
136. Forage crops for swine. By W. J. Kennedy [and others]. Mar., 1913. (Printed Sept., 1914.) Also popular edition.
137. Alfalfa management in Iowa. By H. D. Hughes. Apr., 1913. Abridged edition, Jan., 1914.
138. Silver King, a corn for northern Iowa. By H. D. Hughes. Apr., 1913.
139. Creamery organization and construction, Part I, [Text]. By Martin Mortensen and J. B. Davidson. Part II, building plans. May, 1913.
140. Lacto, a frozen dairy product. By Martin Mortensen and B. W. Hammer. Aug., 1913.
141. Modern silo construction. By J. B. Davidson. July, 1913. Revision of 117. See 189.
142. The wood-using industries of Iowa. Contents: Wood working industries of Iowa. By Hu Maxwell and J. T. Harris.—The timber resources of Iowa. By G. B. Macdonald.—White pine in Iowa. By N. C. Brown. Aug., 1913.
143. Hogging down corn, a successful practice. By J. M. Evvard, W. J. Kennedy, and H. H. Kildee. Sept., 1913.
144. Cold storage for Iowa grown apples. By Laurenz Greene. Sept., 1913.
145. The effect of city smoke on vegetation. By A. L. Bakke. Oct., 1913.
146. Iowa seed analyses, 1910-1913. By L. H. Pammel and Charlotte M King. Mar., 1914.
147. The codling-moth in Iowa, *Carpocapsa pomonella* Linn. By R. L. Webster. Apr., 1914. Also popular edition.
148. Effect of potato scab treatments on seed vitality: Formaldehyde and corrosive sublimate solution and formaldehyde gas. By T. G. Maney. Apr. 1914. Also popular edition.
149. Better methods of potato production for Iowa. By Laurenz Greene and T. J. Maney. Apr., 1914. Also popular edition.
150. The fertility in Iowa soils. By P. E. Brown. June, 1914. Also popular edition.
151. Soil acidity and the liming of Iowa soils. By P. E. Brown, F. B. Howe, and M. E. Sar. Sept., 1914. Abridged edition. Dec., 1915.
152. Movable hog houses. By J. M. Evvard and J. B. Davidson. Oct., 1914.
153. An apple orchard survey of Mills County. By Laurenz Greene. Nov., 1914. Circ. 20 is an abstract of Bul. 153.
154. The pasteurization of milk in the final package. By B. W. Hammer and A. J. Hauser. Nov., 1914.
155. Potato insects. By R. L. Webster. May, 1915. Also popular edition.

156. Pasterization of cream for buttermaking: Part I, Effect on quality and chemical composition. By Martin Mortensen, W. G. Gaessler, and W. H. Cooper.—Part II, Bacteriological studies. By B. W. Hammer. Dec., 1914.
157. Improving Iowa's peat and alkali soils. By W. H. Stevenson and P. E. Brown. June, 1915.
158. Preservative treatment of fence posts. By G. B. MacDonald. Aug., 1915. Abridged edition, Dec., 1915.
159. Farm leases in Iowa. By O. G. Lloyd. Sept., 1915. Abridged edition, Dec., 1915.
160. Grape pruning: The spur and long cane systems compared. By T. J. Maney. Oct., 1915.
161. Maintaining fertility in the Wisconsin drift soil area in Iowa. By W. H. Stevenson, P. E. Brown, and I. W. Forman. Oct., 1915.
162. Two strawberry slugs. By R. L. Webster. Nov., 1915. Also popular edition.
163. Late potato blight in Iowa. By A. T. Erwin. Apr., 1916.
164. Studies on the market milk of Iowa. Complete with appendix of tables. By B. W. Hammer and A. J. Hauser. Apr., 1916.
165. Influence of environment and breeding in increasing dairy production. By H. H. Kildee and A. C. McCandlish. May, 1916.
166. Community hog houses. By J. B. Davidson, J. M. Evvard, and W. G. Kaiser. May, 1916. Also abridged edition, July, 1916.
167. Rotation and manure experiments on the Wisconsin drift soil area. By W. H. Stevenson and P. E. Brown. Oct., 1916.
168. Silage and silage fermentation. By A. R. Lamb. Dec., 1916.
169. The weather and honey production. By L. A. Kenoyer. Mar., 1917.
170. Evergreen trees for Iowa. By G. B. MacDonald. Mar., 1917. Also abridged edtion.
171. Bordeaux spray for tip burn and early blight of potatoes. By A. T. Erwin. July, 1917.
172. Managing a tuberculous herd: Part I, History of the tuberculous herd at Iowa State College since 1909. By W. H. Pew.—Part II, Plans for the control and eradication of tuberculosis. By C. H. Stange. July, 1917.
173. The box elder aphid (*Chaitophorus negundinia* Thomas). By R. L. Webster. Oct., 1917.
174. Bacteria in ice cream—II. By B. W. Hammer and E. F. Goss. Dec., 1917.
175. Improving the oat crop. By L. C. Burnett. Mar., 1918.
176. A successful Iowa shed roof poultry house. By G. M. Turpin and M. F. P. Costelloe. Mar., 1918.
177. The "alkali" soils of Iowa. By R. L. Bancroft. Mar., 1918.
178. The nesting habits of the hen. By G. M. Turpin. May, 1918.
179. The strawberry leaf-roller (*Ancylis comptana* Fröhl.). By R. L. Webster. Nov., 1918. Also abridged edition, April, 1918
180. Factors which influence the yield and consistency of ice cream. By Martin Mortensen. May, 1918. May, 1918.
181. Baby beef production. By W. H. Pew and J. M. Evvard. Oct., 1918.
182. Limiting the grain ration for fattening cattle. By W. H. Pew, J. M. Evvard, and Russell Dunn. Oct., 1918.
183. Soil erosion in Iowa. By E. E. Eastman and J. S. Glass. Jan., 1919.
184. A rural social survey of Orange Township, Blackhawk County, Iowa. By G. H. Von Tungeln, W. A. Brindley, and H. B. Hawthorn. Dec., 1918.
185. Corn supplements and substitutes for fattening lambs. By Russell Dunn and J. M. Evvard. Jan., 1919.
186. A bacteriological study of the method of pasteurizing and homogenizing the ice cream mix. By B. W. Hammer and L. R. Sanders. Mar., 1919.
187. Soiling crops for milk production. By L. S. Gillette, A. C. McCandlish, and H. H. Kildee. Mar., 1919.
188. Influence of environment and breeding in increasing dairy production, II. By A. C. McCandlish, L. S. Gillette, and H. H. Kildee. Mar., 1919.
189. Silo construction. By C. K. Shedd and W. A. Foster. Apr., 1919. Revision of 141.
190. Bacteriological results obtained in practice with vat pasteurization and with one of the final package methods. By B. W. Hammer. July, 1919.
191. Reclaiming Iowa's "push" soils. By L. W. Forman. Nov., 1919.
192. Cold storage for Iowa apples, third progress report: A, Control of certain diseases of cold-stored apples; B, Changes of temperature in cold-stored apples. By W. E. Whitehouse, S. A. Beach, and T. J. Maney. Dec., 1919.
193. A rural social survey of Lone Tree Township, Clay County, Iowa. By G. H. Von Tungeln and W. A. Brindley. Mar., 1920.

RESEARCH BULLETINS.

1. The chemical nature of the organic nitrogen in the soil. By S. L. Jodidi. June, 1911.
2. Some bacteriological effects of liming. By P. E. Brown. Aug., 1911.
3. The chemical nature of the organic nitrogen in the soil: Parts 2–3, Influence of various factors on decomposition of soil organic matter. By S. L. Jodidi and A. A. Wells. Oct. 1911.
4. Bacterial activities in frozen soils. By P. E. Brown and R. E. Smith. Jan., 1912.
5. Bacteriological studies of field soils: I, The effect of lime. By P. E. Brown. Feb., 1912.
6. Bacteriological studies of field soils: II, The effects of continuous cropping and various rotations. By P. E. Brown. Mar., 1912.
7. Volatile aliphatic acids of corn silage. By A. W. Dox and R. E. Neidig. June, 1912.
8. Bacteria at different depths in some typical Iowa soils. By P. E. Brown. May, 1912.
9. Amino acids and acid amides as sources of ammonia in soils. By S. L. Jodidi, E. H. Kellogg, and R. S. Snyder. Nov., 1912.
10. Lactic acid in corn silage. By A. W. Dox and R. E. Neidig. Mar., 1913.
11. Methods for bacteriological examination of soils; media for quantitative determination of bacteria in soils. By P. E. Brown. June, 1913.
12. Chemical studies of the lime sulfur-lead arsenate spray mixture. By W. E. Ruth. June, 1913.
13. Bacteriological studies of field soils: III, The effect of barn yard manure. By P. E. Brown. Sept., 1913.
14. The specific heat of milk and milk derivatives. By B. W. Hammer and A. R. Johnson. Oct., 1913.
15. A bacteriological study of blue milk. By B. W. Hammer. Feb., 1914.
16. Chemical changes during silage formation. By R. E. Neidig. July, 1914.
17. Determination of ammonia in soils. By R. S. Potter and R. S. Snyder. Oct., 1914.
18. Sulfofication in soils. By P. E. Brown and E. H. Kellogg. Dec., 1914.
19. Bacteriological studies on the coagulation of evaporated milk. By B. W. Hammer. Jan., 1915.
20. Bacteriological studies on two yellow milk organisms. By B. W. Hammer. Jan., 1915.
21. Hardiness in the apple as correlated with structure and composition. By S. A. Beach and F. W. Allen, jr. Mar., 1915.
22. Slimy and ropy milk. By R. E. Buchanan and B. W. Hammer. July, 1915.
23. Relation of moisture to seed production in alfalfa. By J. N. Martin. July, 1915.

24. Determination of amino acids and nitrates in soils: Amino acids, ammonia and nitrates in manured and limed soil. By R. S. Potter and R. S. Snyder. July, 1915.
25. Bacterial activities and crop production. By P. E. Brown. July, 1915.
26. Studies on the determination of sulfur as barium sulfate. By P. L. Blumenthal and S. C. Guernsey. Sept., 1915.
27. Studies on the formation of gas in milk. By B. W. Hammer. Jan., 1916.
28. Studies on the clarification of milk. By B. W. Hammer. Jan., 1916.
29. Studies on the numbers of bacteria in milk showing various changes. By B. W. Hammer and R. H. Hix. Jan., 1916.
30. Inheritance of color and horns in blue gray cattle. By Orren Lloyd-Jones and J. M. Evvard. Jan., 1916.
31. Studies on the creaming ability of milk. By B. W. Hammer. July, 1916.
32. Estimation of calcium in ash of forage plants and animal carcasses. By S. B. Kuzirian. Mar., 1916.
33. Studies on a fusarium disease of corn and sorghum. (Preliminary.) By L. H. Pammel, Charlotte M. King, and J. L. Seal. Mar., 1916.
34. Studies in sulfofication. By P. E. Brown and H. W. Johnson. July, 1916.
35. Effect of some manganese salts on ammonification and nitrification. By P. E. Brown and G. A. Minges. July, 1916.
36. Influence of humus forming materials of different nitrogen-carbon ratios on bacterial activities. By P. E. Brown and F. E. Allison. July, 1916.
37. Environmental influences on nectar secretion. By L. A. Kenoyer. Nov., 1916.
38. Fishiness in evaporated milk. By B. W. Hammer. Jan., 1917.
39. Carbon dioxide production in soils and carbon and nitrogen changes in soils variously treated. By R. S. Potter and R. S. Snyder. Feb., 1916 [i. e. 1917].
40. The relative influence of microorganisms and plant enzyms on corn silage fermentation. By A. R. Lamb. Mar., 1917.
41. A rapid volumetric method for approximate estimation of chlorine in milk. By B. W. Hammer and D. E. Bailey. June, 1917.
42. The occurrence and significance of mannitol in silage. By A. W. Dox and G. P. Plaisance. Dec., 1917.
43. Effect of sulfur and manure on availability of rock phosphate in soil. By P. E. Brown and A. R. Gwinn. Dec., 1917.
44. Effects of certain alkali salts on ammonification. By P. E. Brown and D. R. Johnson. Jan., 1918.
45. Soil inoculation with aztobacter. By Paul Emerson. Feb., 1918.
46. Composition and digestibility of Sudan grass hay. By W. G. Gaessler and A. C. McCandlish. Feb., 1918.
47. Studies on the clarification of milk, II. By B. W. Hammer and A. J. Hauser. Mar., 1918.
48. Milk as the sole diet of ruminants. By A. C. McCandlish. Aug., 1918.
49. Studies on the crown rust of oats. By I. E. Melhus and L. W. Durrell. Feb., 1919.
50. The effect of crown gall upon a young apple orchard. By Laurenz Greene and I. E. Melhus. Mar., 1919.
51. Appetite as a guide in feeding dairy calves. By A. C. McCandlish. Aug., 1919.
52. Studies on abnormal evaporated milk. By B. W. Hammer. Aug., 1919.
53. Studies on color in swine: I, The hereditary relationship of the black of the Hampshire and the red of the Duroc-Jersey. By Orren Lloyd-Jones and J. M. Evvard. Nov., 1919.
54. Studies on formation of gas in sweetened condensed milk. By B. W. Hammer. Sept., 1919.
55. The volatile acid production of starters and of organisms isolated from them. By B. W. Hammer and D. E. Bailey. Sept., 1919.
56. Effect of seasonal conditions and soil treatment on bacteria and molds in soil. By P. E. Brown and W. V. Halversen. Dec., 1919.
57. Relation of the barberry to stem rust in Iowa. By I. E. Melhus, L. W. Durrell, and R. S. Kirby. Jan., 1920.
58. Nitrification in acid soils. By R. E. Stephenson. Aug., 1920.
59. The fungicidal action of formaldehyde. By I. E. Melhus, J. C. Gilmen, and J. B. Kendrick. Aug., 1920.
60. Influence of condition on the maintenance requirements of dairy cattle. By A. C. McCandlish and W. G. Gaessler. Sept., 1920.
61. A study of lactose-fermenting yeasts present in "yeasty" cream. By B. W. Hammer and W. A. Cordes. Sept., 1920.
62. Comparative resistance of varieties of oats to crown and stem rusts. By L. W. Durrell and J. H. Parker. Oct., 1920.
63. Volatile acid production of *S. lacticus* and the organisms associated with it in starters. By B. W. Hammer. Oct., 1920.
64. A study of brown glass milk bottles, with special reference to their use in preventing abnormal flavors due to light. By B. W. Hammer and W. A. Cordes. Nov., 1920.
65. The type of lactic acid produced by starters and by the organisms isolated from them. By B. W. Hammer. Nov., 1920.

SOIL SURVEY REPORTS.

1. Bremer County soils. By W. H. Stevenson, P. E. Brown, and F. B. Howe. Jan., 1917.
2. Pottawattamie County soils. By W. H. Stevenson, P. E. Brown, H. P. Hanson, and H. W. Reid. Jan., 1918.
3. Muscatine County. By W. H. Stevenson, P. E. Brown, and H. W. Johnson. Apr., 1918.
4. Webster County soils. By W. H. Stevenson, P. E. Brown, F. B. Howe, and G. E. Corson. July, 1918.
5. Lee County. By W. H. Stevenson, P. E. Brown, M. E. Sar, and G. E. Corson. Sept., 1918.
6. Sioux County. By W. H. Stevenson, P. E. Brown, G. E. Corson, and W. C. Bean. Nov., 1918.
7. Van Buren County soils. By W. H. Stevenson, P. E. Brown, G. E. Corson, and H. W. Reid. Dec., 1918.
8. Clinton County. By W. H. Stevenson, G. E. Corson, and F. B. Howe. Dec., 1918.
9. Scott County soils. By W. H. Stevenson, P. E. Brown, G. E. Corson, and Knute Espe. Jan., 1919.
10. Ringgold County. By W. H. Stevenson, P. E. Brown, G. E. Corson, F. B. Howe, and M. E. Olson. Feb., 1919.
11. Mitchell County. By W. H. Stevenson, P. E. Brown, G. E. Corson, Knute Espe, and M. E. Olson. Feb., 1919.
12. Clay County. By W. H. Stevenson, P. E. Brown, G. E. Corson, T. H. Benton, and M. E. Olson, May, 1919.
13. Montgomery County. By W. H. Stevenson, P. E. Brown, G. E. Corson, M. E. Olson, and L. L. Rhodes. July, 1920.
14. Black Hawk County. By W. H. Stevenson, P. E. Brown, G. E. Corson, and H. J. Harper. July, 1920.

15. Henry County. By W. H. Stevenson, P. E. Brown, L. W. Forman, and T. H. Benton. Sept., 1920.
16. Buena Vista County soils. By W. H. Stevenson, P. E. Brown, L. W. Forman, and H. W. Warner. Oct., 1920.
17. Linn County. By W. H. Stevenson, P. E. Brown, L. W. Forman, and F. B. Howe. Dec., 1920.

INDEXES.

Complete list of publications including Bulletins [1–182], Circulars [1–54], Press Bulletins [1–39], Research Bulletins [1–48], and Soil Survey Bulletins, [1–4], [and subject index]. Jan. 1, 1919.

KANSAS.

Kansas Agricultural Experiment Station, Manhattan.

1. Announcement [of organization and aims]. Apr., 1888.
2. Cultivated grasses and clovers in Kansas: Fourteen years' experience at the college farm. By E. M. Shelton. Apr., 1888.
3. Observations on two insect pests. By E. A. Popenoe. June, 1888.
4. Experiments with wheat. By E. M. Shelton. Sept., 1888.
5. Some comparisons of varieties of sorghum. By G. H. Failyer.—Preliminary report on sorghum blight. By W. A. Kellerman. Dec., 1888.
6. Silos and silage. By E. M. Shelton. June, 1889.
7. Experiments with wheat. By E. M. Shelton. July, 1889.
8. Preliminary report on smut in oats. By W. A. Kellerman and W. T. Swingle. Oct., 1889.
9. Experiments in pig-feeding. By E. M. Shelton and H. M. Cottrell. Dec., 1889.
10. Department of horticulture and entomology: Notes on conifers for Kansas planters. By E. A. Popenoe, S. C. Mason, and F. A. Marlatt. May, 1890.
11. Experiments with wheat. By C. C. Georgeson, H. M. Cottrell, and William Shelton. July, 1890.
12. Preliminary experiments with fungicides for stinking smut of wheat. By W. A. Kellerman and W. T. Swingle. Aug., 1889.
13. Experiments with oats. By C. C. Georgeson, H. M. Cottrell, and William Shelton. Aug., 1890.
14. Winter protection of peach trees and notes on grapes. By E. A. Popenoe, S. C. Mason, and F. A. Marlatt. Dec., 1890.
15. Additional experiments and observations on oat smut made in 1890. By W. A. Kellerman an W. T. Swingle. Dec., 1890.
16. Experiments with sorghum and sugar beets. By G. H. Failyer and J. T. Willard. Dec., 1890.
17. Crossed varieties of corn, second and third years. By W. A. Kellerman and W. T. Swingle. Dec., 1890.
18. Experiments with forage plants. By C. C. Georgeson, H. M. Cottrell, and William Shelton. Dec., 1890.
19. Germination of weeviled peas; garden notes on potatoes, beans, and cabbage. By E. A. Popenoe, S. C. Mason and F. A. Marlatt. Dec., 1890.
20. Experiments with wheat. By C. C. Georgeson, H. M. Cottrell, and William Shelton. July, 1891.
21. Second report on fungicides for stinking smut of wheat. By W. A. Kellerman. Aug., 1891.
22. Smut of oats in 1891; test of fungicides to prevent loose smut of wheat; spraying to prevent wheat rust. W. A. Kellerman. Aug., 1891.
23. Smuts of sorghum; corn smut. By W. A. Kellerman. Aug., 1891.
24. Enzootic cerebritis or "staggers" of horses. By N. S. Mayo. Sept., 1891.
25. Experiments with sorghum. By G. H. Failyer and J. T. Willard. Dec., 1891.
26. A comparison of varieties of the strawberry. By E. A. Popenoe and S. C. Mason. Dec., 1891.
27. Crossed varieties of corn, third year. By W. A. Kellerman and C. H. Thompson. Dec., 1891.
28. Second report on the experimental vineyard. By E. A. Popenoe and S. C. Mason. Dec., 1891.
29. Experiments with oats. By C. C. Georgeson, F. C. Burtis, and William Shelton. Dec., 1891.
30. Experiments with corn. By C. C. Georgeson, F. C. Burtis, and William Shelton. Dec., 1891.
31. Sugar beets. By G. H. Failyer and J. T. Willard. Dec., 1891.
32. Composition of some feeding stuffs; varying composition of certain plants during development. By G. H. Failyer and J. T. Willard.—Test of some Japanese beans; plaster and oil meal as fertilizers for millet; plaster on prairie grass; plaster on tame grass. By C. C. Georgeson, F. C. Burtis, and William Shelton. Dec., 1891.
33. Experiments with wheat. By C. C. Georgeson, F. C. Burtis, and William Shelton. Aug., 1892.
34. Experiments in feeding steers, [I]. By C. C. Georgeson, F. C. Burtis, and William Shelton. Sept., 1892.
35. *Actinomycosis bovis*, or "lumpy jaw" of cattle; some observations upon loco. By N. S. Mayo. Dec., 1892.
36. Experiments with sorghum and sugar beets. By G. H. Failyer and J. T. Willard. Dec., 1892.
37. Experiments in potato culture. By E. A. Popenoe, S. C. Mason, and F. A. Marlatt. Dec., 1892.
38. Preliminary report on rusts of grain. By A. S. Hitchcock and M. A. Carleton. Mar., 1893.
39. Experiments in feeding steers, II. By C. C. Georgeson, F. C. Burtis, and D. H. Otis. Aug., 1893.
40. Experiments in wheat. By C. C. Georgeson, F. C. Burtis, and D. H. Otis. Aug., 1893.
41. The effect of fungicides upon the germination of corn. By A. S. Hitchcock and M. A. Carleton. Dec., 1893.
42. Experiments with oats. By C. C. Goergeson, F. C. Burtis, and D. H. Otis. Dec., 1893.
43. Experiments with sorghum and sugar beets. By G. H. Failyer and J. T. Willard. Dec., 1893.
44. Further study of native grapes. By E. A. Popenoe and S. C. Mason. Dec., 1893.
45. Experiments with corn. By C. C. Georgeson, F. C. Burtis, and D. H. Otis. Dec., 1893.
46. Rusts of grain, II. By A. S. Hitchcock and M. A. Carleton. May, 1894.
47. Experiments with wheat: experiments in feeding steers, III. By C. C. Georgeson, F. C. Burtis, and D. H. Otis. Aug., 1894.
48. Six years' experience with ensilage; some forage plants; renovating a prairie pasture. By C. C. Georgeson, F. C. Burtis, and D. H. Otis. Dec., 1894.
49. Cattle poisoning by potassium nitrate; mastitis. By N. S. Mayo. May, 1894.
50. Kansas weeds: I, Seedlings. By A. S. Hitchcock and J. B. S. Norton. June, 1895.
51. Steer feeding experiments: IV, A comparison between pure-bred shorthorns and scrubs. By C. C. Georgeson, F. C. Burtis, and D. H. Otis. June, 1895.
52. Kansas weeds: II, Preliminary circular on distribution. By A. S. Hitchcock and J. B. S. Norton. Sept., 1895.
53. Pig feeding experiments with corn, wheat, kaffir corn, and cottonseed. By C. C. Georgeson, F. C. Burtis, and D. H. Otis. Oct., 1895.
54. Experiments with oats. By C. C. Georgeson, F. C. Burtis, and D. H. Otis. Dec., 1895.

55. Small fruits culture by irrigation: Water supply storage and distribution; culture of the strawberry. By S. C. Mason, and F. C. Sears. Dec., 1895.
56. Experiments with corn; experiments with kaffir corn. By C. C. Georgeson, F. C. Burtis, and D. H. Otis. Dec., 1895.
57. Kansas weeds: III, Descriptive list. By A. S. Hitchcock and J. B. S. Norton. June, 1896.
58. Cornstalk disease of cattle: Preliminary bulletin. By N. S. Mayo. June, 1896.
59. Experiments with wheat. By C. C. Georgeson, F. C. Burtis, and D. H. Otis. Aug., 1896.
60. Steer-feeding experiments, V. By C. C. Georgeson, F. C. Burtis, and D. H. Otis. Sept., 1896.
61. I, Kaffir-corn, corn and soy-bean meal for pigs; II, kaffir-corn and corn-meal for cattle. By C. C. Georgeson, F. C. Burtis, and D. H. Otis. Nov., 1896.
62. Corn smut. By A. S. Hitchcock and J. B. S. Norton. Dec., 1896.
63. Experiments with oats. By C. C. Georgeson, F. C. Burtis, and D. H. Otis. Dec., 1896.
64. Experiments with corn. By C. C. Georgeson, F. C. Burtis, and D. H. Otis. Mar., 1897.
65. Grafting the apple. By S. C. Mason and Isaac Jones. May, 1897.
66. Kansas weeds: IV, Fruits and seeds. By A. S. Hitchcock and G. L. Clothier. June, 1897.
67. Steer-feeding experiments, VI. By C. C. Georgeson, F. C. Burtis, and D. H. Otis. June, 1897.
68. Soil moisture. By G. H. Failyer and J. T. Willard. June, 1897.
69. Some diseases of cattle: Texas itch, blackleg, tuberculosis, Texas fever. By N. S. Mayo. June, 1897.
70. Vegetable growing. By S. C. Mason and W. L. Hall. July, 1897.
71. Experiments with wheat. By C. C. Georgeson, F. C. Burtis, and D. H. Otis. July, 1897.
72. Growth of young stock. By C. C. Georgeson, F. C. Burtis, and D. H. Otis. July, 1897.
73. Fruit notes. By S. C. Mason and W. L. Hall. July, 1897.
74. Experiments with oats. By C. C. Georgeson, F. C. Burtis, and D. H. Otis. July, 1897.
75. Root development of some forage plants. By C. C. Georgeson, and J. E. Payne. Aug., 1897.
76. Fifth report on Kansas weeds: Vegetative propagation of perennial weeds. By A. S. Hitchcock and G. L. Clothier. Feb., 1898.
77. Some insects injurious to the orchard. By E. E. Faville and P. J. Parrott. Mar., 1898.
78. Sugar beets. By J. T. Willard. Apr., 1898.
79. Bovine tuberculosis. By Paul Fischer. Apr., 1898.
80. Sixth report on Kansas weeds: Distribution and other notes. By A. S. Hitchcock and G. L. Clothier June, 1898.
81. Feed and care of the dairy cow. By H. M. Cottrell, F. C. Burtis, and D. H. Otis. Sept., 1898.
82. The potato-stalk weevil. By E. E. Faville and P. J. Parrott. Jan., 1899.
83. Sugar beets. By J. T. Willard and R. W. Clothier. Apr., 1899.
84. Cold storage for fruit. By E. E. Faville and W. L. Hall. Apr., 1899.
85. Investigations of the growth of alfalfa in Kansas. By G. L. Clothier.—Alfalfa feeding notes. By H. M. Cottrell. Apr., 1899.
86. Press bulletins 1–34. June, 1899.
87. Native agricultural grasses of Kansas. By A. S. Hitchcock and G. L. Clothier. Apr., 1899.
88. Keeping milk in summer. By H. M. Cottrell, F. C. Burtis, and D. H. Otis. May, 1899.
89. Soil moisture. By J. T. Willard and R. W. Clothier. June, 1899.
90. Alfalfa in eastern Kansas. By H. M. Cottrell, D. H. Otis, and J. G. Haney. Jan., 1900.
91. Swine plague. By Paul Fischer and A. T. Kinsley. Feb., 1900.
92. A new drought-resisting crop—soy beans. By H. M. Cottrell, D. H. Otis, and J. G. Haney. Mar., 1900.
93. Kafir-corn. By H. M. Cottrell, D. H. Otis, and J. G. Haney. Mar., 1900.
94. Sugar beets, 1899. By J. T. Willard and R. W. Clothier.—The station publications; partial index to station publications to Apr. 1, 1900. By J. T. Willard. Apr., 1900.
95. Fattening hogs with drought-resisting crops. By H. M. Cottrell, D. H. Otis, and J. G. Haney. Apr., 1900.
96. Soil inoculation for soy beans. By H. M. Cottrell, D. H. Otis, and J. G. Haney. May, 1900.
97. Skim milk calves. By H. M. Cottrell, D. H. Otis, and J. G. Haney. May, 1900.
98. Some scale insects upon Kansas grasses. By E. A. Popenoe and P. J. Parrott. May, 1900.
99. Press bulletins 35–70. Oct., 1900.
100. Soy beans in Kansas in 1900. By H. M. Cottrell, D. H. Otis, and J. G. Haney. Mar., 1901.
101. Notes from the plum orchard. By E. A. Popenoe and Albert Dickens. Jan., 1901.
102. Forage plants for Kansas. By A. S. Hitchcock and J. M. Westgate. Mar., 1901.
103. Digestion experiments with Kansas feeds; sugar beets, 1891–1900. By J. T. Willard and R. W. Clothier. June, 1901.
104. Fall seeding of alfalfa. By H. M. Cottrell. Aug., 1901.
105. Blackleg in Kansas. By Paul Fischer and A. T. Kinsley. Nov., 1901.
106. The experimental apple orchard. By Albert Dickens and G. O. Greene. Jan., 1902.
107. Analyses of corn, with reference to its improvement. By J. T. Willard, R. W. Clothier, and F. C. Weber. Apr., 1902.
108. The hardy catalpa: The catalpa as an economic tree. By H. F. Roberts.—The catalpa plantations at the agricultural college. By Albert Dickens. Apr., 1902.
109. Spontaneous combustion of alfalfa. By H. M. Cottrell. May, 1902.
110. Grapes. By Albert Dickens and G. O. Greene. May, 1902.
111. Quality in beef. By H. M. Cottrell and V. M. Shoesmith. May, 1902.
112. Fattening steers without hogs to follow. By H. M. Cottrell and J. G. Haney. June, 1902.
113. Baby beef. By H. M. Cottrell, J. G. Haney, and O. H. Elling. June, 1902.
114. Growing alfalfa in Kansas. By H. M. Cottrell. June, 1902.
115. The exact calculation of balanced rations. By J. T. Willard. Dec., 1902.
116. Destroying prairie dogs and pocket gophers. By D. E. Lantz. Jan., 1903.
117. Bacteria of the soil. By N. S. Mayo and A. T. Kinsley. May, 1903.
118. Flesh and fat in beef. By D. H. Otis. May, 1903.
119. Press bulletins 71–124. Sept., 1903.
120. Tests of forest trees. By Albert Dickens and G. O. Greene. Jan., 1904.
121. Treatment and utilization of flood-damaged lands: [Renewing washed and sanded lands. By A. M. Ten Eyck.—Sand-binding grasses. By H. F. Roberts.—Trees for the sanded areas. By Albert Dickens.] Jan., 1904.
122. Blackleg and vaccination. By N. S. Mayo and C. L. Barnes. Feb., 1904.
123. Crop experiments in 1903. By A. M. Ten Eyck and V. M. Shoesmith. Mar., 1904.
124. Experiments in feeding steers and in breeding and feeding pigs. By D. H. Otis. Mar., 1904.
125. Experiments with dairy cows. By D. H. Otis. May, 1904.

---

[a] Buls. 72–75 were issued under one cover with the Annual Report for 1897 and an index to publications for the year.

126. Experiments with hand-fed calves. By D. H. Otis. May, 1904.
127. The roots of plants. By A. M. Ten Eyck. June, 1904.
128. Fort Hays Branch experiments, 1902–1904. Dec., 1904.
129. Kansas mammals in their relation to agriculture. By D. E. Lantz. Dec., 1904.
130. Steer feeding experiment, VII, 1903–4. By Oscar Erf, R. J. Kinzer, and G. C. Wheeler. Apr., 1905.
131. Care of dairy utensils. By Oscar Erf and C. W. Melick. Apr., 1905.
132. Western feeds for beef production. By J. G. Haney, O. H. Elling, and G. K. Helder. Jan., 1906.
133. Alfalfa seed: Its adulterants, substitutes, and impurities, and their detection. By H. F. Roberts and G. F. Freeman. Feb., 1906.
134. The alfalfa seed-crop and seeding alfalfa. By A. M. Ten Eyck. Mar., 1906.
135. Grading cream. By Oscar Erf. May, 1906.
136. Press bulletins 125–151. June, 1906.
137. Variations in the test of separator creams. By C. W. Melick. June, 1906.
138. Effect of bacteria in wash water of butter. By C. W. Melick. June, 1906.
139. The study of corn. By V. M. Shoesmith. June, 1906. Revised reprint, Oct., 1907.
140. Milking machines. By Oscar Erf. Oct., 1906.
141. Commercial seeds of brome grass and of English and Kentucky blue grasses; adulterants and substitutes and their detection. By H. F. Roberts and G. F. Freeman. Jan., 1907.
142. The value of oil in road improvement. By Albert Dickens. Jan., 1907.
143. Disposal of dairy and farm sewage, and water supply. By Oscar Erf. Feb., 1907.
144. Small-grain crops. By A. M. Ten Eyck and V. M. Shoesmith. Mar., 1907.
145. Spraying. By Albert Dickens and R. E. Eastman. Apr., 1907.
146. Kansas law regulating the sale of concentrated feeding stuffs. By C. W. Burkett and J. T. Willard. May, 1907.
147. Indian corn. By A. M. Ten Eyck and V. M. Shoesmith. June, 1907.
148. Kansas law regulating the sale of commercial fertilizers. By C. W. Burkett and J. T. Willard. July, 1907.
149. Prevention of sorghum and kafir-corn smut. By H. F. Roberts and G. F. Freeman. July, 1907.
150. The hen's place on the farm. By Oscar Erf. Oct., 1907.
151. Alfalfa breeding: Materials and methods. By H. F. Roberts and G. F. Freeman. Dec., 1907 [i. e. 1908].
152. The pocket gopher. By T. H. Scheffer. Feb., 1908. See 172.
153. Deterioration of red Texas oats in Kansas. By H. F. Roberts and G. F. Freeman. Mar., 1908.
154. The mound-building prairie ant. By T. J. Headlee and G. A. Dean. Apr., 1908.
155. Alfalfa. By G. F. Freeman [and others]. June, 1908.
156. The yellow berry problem in Kansas hard winter wheats. By H. F. Roberts and G. F. Freeman. Oct. 1908.
157. Studies on hog cholera and preventive treatment. By W. E. King. Nov., 1908.
158. Analyses of registered feeding stuffs. By J. T. Willard [and others]. Mar., 1909.
159. Analyses of eggs. By J. T. Willard and R. H. Shaw. Mar., 1909.
160. Cow peas. By A. M. Ten Eyck and L. E. Call. Apr., 1909. Second edition, Jan., 1910.
161. The influence of depth of cultivation upon soil bacteria and their activities. By W. E. King and C. J. T. Doryland. Aug., 1909.
162. The marketing of eggs. By A. G. Philips. Dec., 1909.
163. Hog cholera and vaccination. By F. S. Schoenleber. Jan., 1910.
164. The selection and feeding of laying hens. By A. G. Philips. Jan., 1910.
165. Report of state forester upon forest conditions in central and western Kansas. By Albert Dickens. Mar., 1910.
166. Spring grains. By A. M. Ten Eyck. Mar. 24, 1910.
167. A quantitative method for the determination of hardness in wheat. By H. F. Roberts. Mar. 15, 1910.
168. The common mole. By T. H. Scheffer. Aug. 1, 1910.
169. Fertilizers and their use. By J. T. Willard, C. O. Swanson, and R. C. Wiley. Sept. 19, 1910.
170. Breeding for type of kernel in wheat, and its relation to the grading and milling of the grain. By H. F. Roberts. Sept. 19, 1910.
171. Studies on hog cholera and preventive treatment. By W. E. King and R. H. Wilson. Sept., 1910.
172. The pocket gopher. By T. H. Scheffer. Sept. 3, 1910. A revision of 152.
173. Meningo-encephalitis (blind staggers). By T. P. Haslam. Sept., 1910.
174. Spraying the apple orchard. By Albert Dickens and T. J. Headlee. Jan., 1911.
175. Grasses. By A. M. Ten Eyck. Jan. 24, 1911.
176. How to grow wheat in Kansas. By W. M. Jardine and L. E. Call. July, 1911.
177. Milling tests of wheat and baking tests of flour. By J. T. Willard and C. O. Swanson. Aug., 1911.
178. Effect of common mill fumigants on the baking qualities of wheat flour. By G. A. Dean and C. O. Swanson. May, 1911.
179. Kansas State Live Stock Registry Board. Report No. 2. Oct., 1911.
180. Bacteriological studies on eggs. By Otto Maurer. Mar., 1911.
181. The permit system of cream buying. By D. S. Burch and W. F. Droge. Mar., 1912.
182. Vaccination against hog cholera. By F. S. Schoenleber. May, 1912.
183. Kansas State Live Stock Registry Board. Report No. 3. By C. W. McCampbell. Oct., 1, 1912.
184. The permit system of cream buying, revised. By G. S. Hine and W. F. Droge. July, 1913.
185. Preparing land for wheat. By L. E. Call. July, 1913. Corrected reprint, April, 1915.
186. Feeding work horses. By C. W. McCampbell. Dec., 1912.
187. Analyses of registered fertilizers. By J. T. Willard, C. O. Swanson, and R. C. Wiley. Jan., 1913.
188. The Hessian fly. By T. J. Headlee and J. B. Parker. July, 1913.
189. Methods of controlling mill and stored-grain insects, together with the habits and life histories of the common infesting species. By G. A. Dean. July, 1913.
190. The baking qualities of flour as influenced by certain chemical substances, milling by-products and germination of the wheat. By J. T. Willard and C. O. Swanson. Oct., 1913.
191. The chinch bug (*Blissus leucopterus* Say). By T. J. Headlee and J. W. McColloch. Nov., 1913.
192. Hog feeding. By G. C. Wheeler and T. R. H. Wright. Oct., 1913.
193. Variety tests of corn. By A. M. Ten Eyck. Dec., 1913.
194. Report No. 4 Kansas Live Stock Registry Board. Nov., 1913.
194. Potato culture. By Albert Dickens. Dec., 1913.
195. The analysis and registration of commercial feedstuffs. By L. A. Fitz. Dec., 1913.
196. The control of apple blotch. By D. E. Lewis. Dec., 1913.
197. Alfalfa in Kansas. By W. M. Jardine and L. E. Call. Jan., 1914.
198. Kafir in field and feed lot. By G. K. Helder. Apr., 1914.
199. Chemical analyses of some Kansas soils. By C. O. Swanson. June, 1914.
200. Soil survey of Shawnee County, Kansas. By L. E. Call, R. I. Throckmorton, and C. O. Swanson. June, 1914.

201. Some factors influencing the bacterial content and keeping quality of eggs. By L. D. Bushnell and Otto Maurer. June, 1914.
202. Kansas flours: Chemical, baking, and storage tests. By C. O. Swanson, J. T. Willard, and L. A. Fitz. Jan., 1915.
203. Orchard spraying. By D. E. Lewis. Feb., 1915.
204. Commercial fertilizers: I, Analyses of inspection samples of fertilizers. By J. T. Willard and R. C. Wiley.—II, Value and use. By C. O. Swanson. Jan., 1915.
205. Growing corn in Kansas. By C. C. Cunningham. Apr., 1915.
206. The relation of moisture to yield of winter wheat in western Kansas. By L. E. Call and A. L. Hallsted. May, 1915.
207. Soil survey of Cherokee County, Kansas. By L. E. Call, R. I. Throckmorton, and C. O. Swanson. Sept., 1915.
208. Soil survey of Reno County, Kansas. By L. E. Call, R. I. Throckmorton, and C. O. Swanson. Sept., 1915.
209. The use of dynamite in the improvement of heavy clay soils. By L. E. Call and R. I. Throckmorton. Dec., 1915.
210. Smuts of grain and forage crops in Kansas. By L. E. Melchers. Jan., 1916.
211. Soil survey of Jewell County, Kansas. By L. E. Call, R. I. Throckmorton, and C. O. Swanson. Jan., 1916.
212. Sudan grass in Kansas. By G. E. Thompson. Mar., 1916.
213. The time to seed wheat in Kansas. By L. E. Call, S. C. Salmon, and C. C. Cunningham. July, 1916.
214. The San José scale (*Aspidiotus perniciosus* Comstock). By L. M. Pearsons and J. H. Merrill. Sept., 1916.
215. Methods of controlling grasshoppers. By F. B. Milliken. Nov., 1916.
216. The marketing of Kansas butter. By Theodore Macklin. April, 1917.
217. Alfalfa silage. By O. E. Reed and J. B. Fitch. May, 1917.
218. Growing sorghum in Kansas. By C. C. Cunningham and Ralph Kenney. Nov., 1917.
219. Growing wheat in Kansas. By L. E. Call and S. C. Salmon. July, 1918.
220. Soil fertility. By L. E. Call and R. I. Throckmorton. Aug., 1918.
221. Farm leases in Kansas. By W. E. Grimes. June, 1919.
222. The capacity of silos and weights of silage. By C. H. Eckles, O. E. Reed, and J. B. Fitch. Oct., 1919. Report of work carried on jointly by the Kansas and Missouri stations.
223. Improving mongrel farm flocks through selected standard-bred cockerels. By W. A. Lippincott. Jan., 1920.
224. Cooperation applied to marketing by Kansas farmers. By Theodore Macklin. Oct., 1920.

TECHNICAL BULLETINS.

1. The milling and baking quality and chemical composition of wheat and flour as influenced by (1) different methods of handling and storing, (2) heat and moisture, (3) germination. By C. O. Swanson, L. A. Fitz, and Leila Dunton. Jan., 1916.
2. Some important fermentations in silage. By O. W. Hunter and L. D. Bushnell. Jan., 1916.
3. The influence of the ration upon the intestinal flora of swine. By L. D. Bushnell and J. J. Frey. Aug., 1917.
4. A study of the etiology of roup in birds. By J. G. Jackley. Nov., 1917.
5. Some nutritive properties of corn. By J. S. Hughes. May, 1918.
6. The maize billbug or elephant bug (*Sphenophorus maidis* Chittn.). By W. P. Hayes. Jan., 1920.
7. *Solenopsis molesta* Say (Hym.), a biological study. By W. P. Hayes. June, 1920.
8. Bacteriological studies of methods of preparing a seedbed for wheat. By P. L. Gainey. Oct., 1920.

INDEXES.

Partial index to publications to April 1, 1900 [Bulletins 1–93, Press bulletins 1–63, Annual reports 1–12]. (In Kansas Sta. Bul. 94, p. 56–67.)

KENTUCKY.

Kentucky Agricultural Experiment Station, Lexington.

BULLETINS.

1. Do fertilizers affect the quality of tobacco? By A. E. Menke. Dec., 1885.
2. Corn-fodder as food for stock. By M. A. Scovell. [Jan.,] 1886.
3. Milk. A. E. Menke. [1886?].
4. Distillery slop. By A. E. Menke and R. T. Gunn. [1886?]
5. Analyses of feeding stuffs. By M. A. Scovell. [1886?]
6. Clover. By A. E. Menke and H. F. Hillenmeyer. [1886?].
7. Fertilizers. By M. A. Scovell. Sept., 1886.
8. Experiments with wheat. By M. A. Scovell. Sept., 1886.
9. Experiments with potatoes. By M. A. Scovell. Mar., 1887.
10. Fertilizer analyses. By M. A. Scovell. May, 1887.
11. Wheat experiments. By M. A. Scovell. Sept., 1887.
12. Fertilizer analyses. By M. A. Scovell. Dec., 1887.
13. Commercial fertilizers. By M. A. Scovell. Apr., 1888.
14. Analyses of commercial fertilizers. By M. A. Scovell. July, 1888.
15. Wheat experiments. By M. A. Scovell. Sept., 1888.
16. Potato experiments. By M. A. Scovell and A. M. Peter. Dec., 1888.
17. Corn experiments. By M. A. Scovell and A. M. Peter. Feb., 1889.
18. Hemp experiments; notes on the treatment of an old apple orchard. Apr., 1889.
19. Experiments in pigfeeding. By J. H. Connell. May, 1889.
20. Commercial fertilizers. By M. A. Scovell. July, 1889.
21. Wheat experiments.—The grain louse (*Siphonophora avenae*). By Harrison Garman. Sept., 1889.
22. Potato experiments. Dec., 1889.
23. Experiments with oats; fertilizers on meadow land. Feb., 1890.
24. The broom-rape of hemp and tobacco. By Harrison Garman. Mar., 1890. See 105.
25. Strawberries. Apr., 1890.
26. Corn experiments. Apr., 1890.
27. Experiments with commercial fertilizers on hemp. Apr., 1890.
28. Tobacco experiments. May, 1890.

29. Commercial fertilizers. By M. A. Scovell. July, 1890.
30. Wheat experiments. By M. A. Scovell and C. L. Curtis.—A new wheat insect. By Harrison Garman. Aug., 1890.
31. Some strawberry pests. By Harrison Garman. Dec., 1890.
32. Strawberries; vegetables. By C. L. Curtis. Mar., 1891.
33. Corn experiments. Apr., 1891.
34. Commercial fertilizers. By M. A. Scovell. Aug., 1891.
35. Experiments with wheat; experiments with oats. [By M. A. Scovell] and C. L. Curtis. Sept., 1891.
36. Commercial fertilizers. By M. A. Scovell. Dec., 1891.
37. Experiments with potatoes. Dec., 1891.
38. Vegetables; strawberries. By C. L. Curtis. Mar., 1892.
39. Marls. A. M. Peter. Mar., 1892.
40. Some common pests of the farm and garden. By Harrison Garman. Mar., 1892.
41. Commercial fertilizers. By M. A. Scovell. July, 1892.
42. Experiments with wheat; experiments with oats. Sept., 1892.
43. Commercial fertilizers. By M. A. Scovell. Dec., 1892.
44. Bordeaux mixture for apple pests. By Harrison Garman. Jan., 1893.
45. Field experiments with fertilizers: Corn; potatoes; tobacco. Apr., 1893.
46. Commercial fertilizers. By A. M. Peter and M. A. Scovell. Aug., 1893.
47. The pests of shade and ornamental trees; an experiment on plum rot. By Harrison Garman. Dec., 1893.
48. Commercial fertilizers. By M. A. Scovell. Jan., 1894.
49. Destructive locusts in Kentucky; the bud worm of tobacco. By Harrison Garman. Mar., 1894.
50. Fruit growing in Kentucky; notes upon vegetables. By C. W. Mathews. Apr., 1894.
51. Commercial fertilizers. By A. M. Peter, M. A. Scovell, and H. E. Curtis. Aug., 1894.
52. Commercial fertilizers. By M. A. Scovell. Dec., 1894.
53. Spraying for codling moth; the use of arsenites on tobacco; the use of bisulphide of carbon and hydrocyanic-acid gas on low-growing plants. By Harrison Garman. Dec., 1894.
54. Notes on vegetables. By C. W. Mathews and A. T. Jordan. Mar., 1895.
55. Field experiment with fertilizers. Apr., 1895.
56. Analyses of commercial fertilizers. By M. A. Scovell, A. M. Peter, and H. E. Curtis. Aug., 1895.
57. Wheat experiments; oat experiments. Sept., 1895.
58. Cutworms in Kentucky. By Harrison Garman. Nov., 1895.
59. Spraying experiments in 1895: Experiments for checking apple rot and codling moth in 1895. By Harrison Garman and A. M. Peter. Dec., 1895.
60. Analyses of commercial fertilizers. By M. A. Scovell, A. M. Peter, and H. E. Curtis. Dec., 1895.
61. Potatoes: Experiments with fertilizers. By M. A. Scovell.—Insects and fungus pests. By Harrison Garman.—Tests of varieties. By C. W. Mathews. Mar., 1896.
62. Strawberries. By C. W. Mathews. Mar., 1896.
63. Tobacco: Test of fertilizers. By M. A. Scovell and A. M. Peter.—The use of arsenites on tobacco. By Harrison Garman. May, 1896.
64. Analyses of commercial fertilizers. By M. A. Scovell, A. M. Peter, and H. E. Curtis. July, 1896.
65. Analyses of commercial fertilizers. By M. A. Scovell, A. M. Peter, and H. E. Curtis. Dec., 1896.
66. Tobacco: Test of fertilizers. By M. A. Scovell and R. J. Spurr.—Notes on tobacco worms from observations made in 1896; notes on several tobacco insects and on two imperfectly known diseases of tobacco. By Harrison Garman. Feb., 1897.
67. The San José scale in Kentucky. By Harrison Garman. May, 1897.
68. Analyses of commercial fertilizers. By M. A. Scovell, A. M. Peter, and H. E. Curtis. May, 1897.
69. Wheat: Test of varieties; test of fertilizers. Description of varieties; treatment for smut. By Harrison Garman. Sept., 1897.
70. The woolly mullein; the gape disease of young poultry. By Harrison Garman. Dec., 1897.
71. Analyses of commercial fertilizers. By M. A. Scovell, A. M. Peter, and H. E. Curtis. Dec., 1897.
72. Potatoes: 1, Experiments with fertilizers. By M. A. Scovell.—2, Corrosive sublimate and sulphur for potato scab in 1986; 3, corrosive sublimate for potato scab in 1897. By Harrison Garman. Feb., 1898.
73. Strawberries. By C. W. Mathews. Feb., 1898.
74. The chinch bug; earthworms a source of gapes in poultry. By Harrison Garman. May, 1898.
75. Commercial fertilizers. By M. A. Scovell, A. M. Peter, and H. E. Curtis. June, 1898.
76. Commercial fertilizers. By M. A. Scovell, A. M. Peter, and H. E. Curtis. Aug., 1898.
77. Wheat: Test of varieties; test of fertilizers.—Notes and descriptions; red rust of wheat. By Harrison Garman. Sept., 1898.
78. Ginseng: Its nature and culture. By Harrison Garman. Nov., 1898.
79. Commercial fertilizers. By M. A. Scovell, A. M. Peter, and H. E. Curtis. Dec., 1898.
80. Some pests likely to be disseminated from nurseries; the nursery inspection law. By Harrison Garman. Mar., 1899.
81. A method of avoiding lettuce rot; potato-scab experiments. By Harrison Garman. Mar., 1899.
82. Commercial fertilizers. By M. A. Scovell, A. M. Peter, and H. E. Curtis. July, 1899.
83. Wheat: Experiments with fertilizers; variety tests.—Notes and descriptions. By Harrison Garman. Aug., 1899.
84. The elms and their diseases. By Harrison Garman. Nov., 1899.
85. Commercial fertilizers. By M. A. Scovell, A. M. Peter, and H. E. Curtis. Dec., 1899.
86. Inspection and analyses of foods. By M. A. Scovell. Jan., 1900.
87. Kentucky forage plants: The grasses. By Harrison Garman.—Analyses of some Kentucky grasses. By A. M. Peter. May, 1900.
88. Commercial fertilizers. By M. A. Scovell, A. M. Peter, and H. E. Curtis. Aug., 1900.
89. Wheat: Test of varieties; test of fertilizers, descriptions of varieties. By Harrison Garman. Sept., 1900.
90. Commercial fertilizers. By M. A. Scovell, A. M. Peter, and H. E. Curtis. Dec., 1900.
91. Enemies of cucumbers and related plants; experiments with potato scab; the food of the toad. By Harrison Garman. Mar., 1901.
92. Grapes: By C. W. Mathews. Apr., 1901.
93. Diseases of nursery stock; rabbits and their injuries to young trees. By Harrison Garman. June, 1901.
94. Test of varieties of wheat. By J. N. Harper.—Descriptions of varieties of wheat. By Harrison Garman. Sept., 1901.
95. Commercial fertilizers. By M. A. Scovell, A. M. Peter, and H. E. Curtis. Sept., 1901.
96. The Hessian fly; dangerous mosquitoes in Kentucky; poisonous and edible mushrooms. By Harrison Garman. Nov., 1901.
97. Commercial fertilizers. By M. A. Scovell, A. M. Peter, and H. E. Curtis. Dec., 1901.

98. Kentucky forage plants: The clovers and their allies; notes on true grasses in the plots in 1900-1901. By Harrison Garman.—Analyses of forage plants from the plots. By A. M. Peter. Feb., 1902.
99. Oats: Test of varieties; treatment for smut; test of fertilizers. By J. N. Harper.—Relative value of the varieties for feeding. By A. M. Peter. Apr., 1902.
100. Inspection and analyses of food. By M. A. Scovell and R. M. Allen. Feb., 1902.
101. A comparison of feeds for pigs. By D. W. May. May, 1902.
102. Commercial fertilizers. By M. A. Scovell and H. E. Curtis. Sept., 1902.
103. Hessian fly experiments. By Harrison Garman. Dec., 1902.
104. Commercial fertilizers. By M. A. Scovell and H. E. Curtis. Dec., 1902.
105. The broom-rapes. By Harrison Garman. Mar., 1903. Supersedes Bul. 24.
106. Feeding dairy cows. By D. W. May. Apr., 1903.
107. 17-year locusts in Kentucky. By Harrison Garman. May, 1903.
108. Some results in steer feeding. By D. W. May. July, 1903.
109. Commercial fertilizers. By M. A. Scovell and H. E. Curtis. Sept., 1903.
110. Nursery inspection and San José scale. By Harrison Garman. Dec., 1903.
111. The Hessian fly in 1902-1903. By Harrison Garman. Dec., 1903.
112. Commercial fertilizers. By M. A. Scovell, H. E. Curtis, and W. H. Scherffius. Dec., 1903.
113. Protein-content of the wheat kernel. By J. N. Harper and A. M. Peter. Dec., 1904.
114. Insects injurious to cabbage. By Harrison Garman. June, 1904.
115. Wheat. By J. N. Harper. Sept., 1904.
116. On an injury to fruits by insects and birds; the apple-tree measuring worm; the Fall Beauty, a new apple. By Harrison Garman. Dec., 1904.
117. Commercial fertilizers. By M. A. Scovell, H. E. Curtis, and W. H. Scherffius. Dec., 1904.
118. Corn-field tests. By J. N. Harper. Mar., 1905.
119. Labels on adulterated and imitation foods sold in Kentucky. By R. M. Allen. Apr., 1905.
120. Some tree and wood-infesting insects; cabbage snakes. By Harrison Garman. May, 1905.
121. Commercial fertilizers. By M. A. Scovell [and others]. Aug., 1905.
122. Corn: A method of selecting seed corn; a chemical study of the composition of a number of varieties of Kentucky corn. By W. H. Scherffius. Dec., 1905.
123. Commercial fertilizers. By M. A. Scovell [and others]. Dec., 1905.
124. On the adulterants and weed seeds in Kentucky. Samples of blue grass, orchard grass, timothy, red clover, and alfalfa seeds. By Harrison Garman. Mar., 1906.
125. Observations and experiments on clover, alfalfa, and soy beans. By Harrison Garman. Mar., 1906.
126. Soils: Methods and uses of soil analysis; analyses of soils in 1904 and 1905; on the determination of humus in soils. By A. M. Peter and S. D. Averitt. Apr., 1906.
127. The inspection of seeds under the Kentucky pure seed law. By Harrison Garman and M. L. Didlake. Sept., 1906.
128. Commercial fertilizers. By M. A. Scovell [and others]. Dec., 1906.
129. Tobacco: Selection of seed in plants and care of seed; improved methods of handling the crop; elimination of undesirable varieties. By W. H. Scherffius. Feb., 1907.
130. The food of the crow blackbird; the corn root-worms. By Harrison Garman. June, 1907.
131. Concentrated commercial feeding stuffs. By J. D. Turner. Dec., 1907.
132. Commercial fertilizers. By M. A. Scovell, H. E. Curtis, and George Roberts. Dec., 1907.
133. Spraying apple trees; apple orchard pests in Kentucky. By Harrison Garman. Jan., 1908.
134. Milk supply of Kentucky: Louisville. By R. M. Allen. Feb., 1908.
135. Wheat: Test of varieties; chemical study of varieties. By W. H. Scherffius and Henry Woosley. June, 1908.
136. Commercial fertilizers. By M. A. Scovell, H. E. Curtis, and George Roberts. Sept., 1908.
137. The army-worm. By Harrison Garman. Dec., 1908.
138. Commercial fertilizers. By M. A. Scovell, H. E. Curtis, and George Roberts. Dec., 1908.
139. Tobacco. By W. H. Scherffius and Henry Woosley. Jan., 1909.
140. Fertilizers. By George Roberts. Mar., 1909.
141. Concentrated commercial feeding stuffs. By J. D. Turner and H. D. Spears. Mar., 1909.
142. Carnation root-knot. By Harrison Garman. Apr., 1909.
143. Sheep scab. By E. S. Good. May, 1909.
144. Information on food and drug inspection and investigation. By the Food and drug division. Nov. 20, 1909.
145. Some lessons from the corn shows; corn pests. By Harrison Garman. Dec., 1909.
146. Analyses of commercial fertilizers. By M. A. Scovell and H. E. Curtis. Dec. 31, 1909.
147. Common insecticides and fungicides, with directions for the treatment of farm pests. By Harrison Garman. Mar. 15, 1910.
148. Seed testing apparatus. A study of conditions under which our germination tests are made. By Harrison Garman. May 23, 1910.
149. Bleached flour. By R. M. Allen. Sept. 1, 1910.
150. The preservation of drugs. By L. A. Brown. Sept. 25, 1910.
151. An outbreak of gadflies in Kentucky. By Harrison Garman. Oct. 1, 1910.
152. Analyses of commercial fertilizers. By M. A. Scovell and H. E. Curtis. Dec. 31, 1910.
153. Boys' corn clubs and improved methods of corn growing. By T. R. Bryant. Bulletins available for distribution. Mar., 1911.
154. Blowing stumps with dynamite. By George Roberts. June, 1911.
155. Wheat: Variety tests, cultural directions, and treatment of diseases. By George Roberts and E. J. Kinney. July, 1911.
156. Concentrated commercial feeding stuffs. By J. D. Turner and H. D. Spears. Aug., 1911.
157. The dipping of sheep for scabies in tobacco dips with and without the addition of flowers of sulphur. By E. S. Good and T. R. Bryant. Sept., 1911.
158. Analyses of commercial fertilizers. By M. A. Scovell and H. E. Curtis. Dec. 31, 1911.
159. A preliminary study of Kentucky localities in which pellagra is prevalent, having reference to the condition of the corn crop and to the possible presence of an insect or other agent by which the disease spreads. By Harrison Garman. Jan. 15, 1912.
160. Parturient paresis (milk fever) and eclampsia. By D. J. Healy and J. H. Kastle.—The toxic character of the colostrum in parturient paresis. By J. H. Kastle and D. J. Healy.—The internal secretion of the mammae as a factor in the onset of labor. By D. J. Healy and J. H. Kastle. Feb. 1, 1912.
161. Soy beans. By George Roberts and E. J. Kinney. Feb., 1912.
162. The soils of Webster County, Kentucky: Introduction. By A. M. Peter.—Soil survey of Wesbster County. By S. C. Jones. Mar., 1912.
163. Corn production. By George Roberts and E. J. Kinney. Mar., 1912.
164. The catalpas and their allies. By Harrison Garman. Feb. 15, 1912.
165. Investigations of the etiology of infectious abortion of cows and mares. By E. S. Good. Apr., 1912.
166. The diagnosis of infectious abortion in cattle. By F. M. Surface. June, 1912.
167. Forage poisoning or so-called cerebro-spinal meningitis in horses, cattle and mules. By Robert Graham. Sept., 1912.

168. Analyses of commercial fertilizers. By J. H. Kastle and H. E. Curtis. Dec. 31, 1912.
169. The woody plants of Kentucky. By Harrison Garman. Jan. 1, 1913.
170. Concentrated commercial feeding stuffs. By J. D. Turner and H. D. Spears. Jan., 1913.
171. Feeding dairy cows in Kentucky. By J. J. Hooper.—Feeding standard for milk production. By T. L. Haecker.—Experiments in feeding dairy cows and calves. By J. J. Hooper. Apr. 1, 1913.
172. Fumigation and spraying. By Harrison Garman. May 1, 1913.
173. The municipal abattoir. By R. M. Allen and J. W. McFarlin. Aug., 1913.
174. The sulphur content of some typical Kentucky soils. By O. M. Shedd. Sept., 1913.
175. The growing and fattening of hogs in the dry lot and on forage crops. By E. S. Good. Oct., 1913. Second edition, Apr., 1915; third edition, June, 1921.
176. Jack stock of Kentucky; rearing of mules; brood mares for producing mules; experiments in feeding mules. By J. J. Hooper and W. S. Anderson. Nov., 1913.
177. Analyses of commercial fertilizers. By H. E. Curtis. Dec., 1913.
178. Alfalfa and sweet clover. By George Roberts, E. J. Kinney, and H. B. Hendrick. Mar., 1914.
179. Construction and equipment of dairy barns. By W. D. Nicholls.—The dairy barn at the Kentucky Agricultural Experiment Station. By J. J. Hooper. June, 1914.
180. The inheritance of coat colors in horses. By W. S. Anderson. July, 1914.
181. Suggestions relative to the prevention of hog cholera. By J. H. Kastle and Robert Graham.—List of publications of the Kentucky Agricultural Experiment Station. Aug., 1914.
182. Hog cholera and its control. By Robert Graham and E. W. Mumma. Aug., 1914.
183. Some Kentucky weeds and poisonous plants. By Harrison Garman. Aug., 1914.
184. Six different species of nodule bacteria. By Harrison Garman and Mary Didlake. Aug., 1914.
185. Concentrated commercial feeding stuffs. By J. D. Turner and H. D. Spears. Sept., 1914.
186. Experiments with the Sharples mechanical milker. By J. J. Hooper and J. W. Nutter. Dec., 1914.
187. The life history and habits of the corn-ear worm (*Chloridea obsoleta*). By Harrison Garman and H. H. Jewett. Dec., 1914.
188. The relation of sulfur to soil fertility. By O. M. Shedd. Dec., 1914.
189. Analyses of commercial fertilizers. By H. E. Curtis. Dec. 31, 1914.
190. The value of distillers' dried grains in swine feeding operations; the value of wheat as a feed for swine. By E. S. Good and W. V. Smith. Jan., 1915.
191. The teachings of the Kentucky Agricultural Experiment Station relative to soil fertility. By George Roberts and J. H. Kastle. June, 1915.
192. Nonalcoholic carbonated beverages, sanitary condition and composition. By R. M. Allen [and others]. June, 1915.
193. The soils of Kentucky. By S. D. Averitt. July, 1915.
194. Soils of Graves County. By S. C. Jones. July, 1915.
195. Soils of Franklin County. By S. C. Jones. July, 1915.
196. Commercial fertilizers. By H. E. Curtis and William Rodes. Dec., 1915.
197. The feeding of young chicks on grain mixtures of high and low lysine content. By G. D. Buckner, E. H. Nollau, and J. H. Kastle. Jan., 1916.
198. The curing of blue-grass seeds as affecting their viability. By Harrison Garman and E. C. Vaughn. Jan., 1916.
199. Soil experiment fields: A progress report. By George Roberts. Jan., 1916.
200. The locust borer (*Cyllene robiniae*) and other insect enemies of the black locust. By Harrison Garman. Jan., 1916.
201. Hogging down soy beans and cowpeas. By E. S. Good and M. J. Smith. May, 1916.
202. A preliminary study of the marketing of Burley tobacco in central Kentucky. By C. D. Bohannan and D. P. Campbell. June, 1916.
203. Concentrated commercial feeding stuffs. By J. D. Turner and H. D. Spears. July, 1916.
204. Further investigations of the etiology and control of infectious abortion in mares. By E. S. Good and W. V. Smith. Sept. 1, 1916.
205. Commercial fertilizers. By H. E. Curtis [and others]. Dec. 31, 1916.
206. Factors and methods in the profitable production of sanitary milk: I, Practical means of controlling bacterial infection of milk; II, Experimental study of conditions affecting the contamination of milk. By W. D. Nicholls. Mar., 1917.
207. Studies in forage poisoning: V, A preliminary report on an anaerobic bacillus of etiologic significance. By Robert Graham, A. L. Brueckner, and R. L. Pontius. June, 1917.
208. Studies in forage poisoning: VI, An anaerobic organism isolated from ensilage of etiologic significance. By Robert Graham, A. L. Brueckner, and R. L. Pontius. July, 1917.
209. Sanitary inspection of slaughterhouses. By J. O. La Bach and W. H. Simmons. Oct., 1917.
210. Important factors for successful farming in the blue-grass region of Kentucky. By J. H. Arnold and W. D. Nicholls. Oct., 1917.
211. Inspection and sanitation of dairies. By J. O. La Bach and N. M. Cregor. Dec., 1917.
212. American jack stock and mule production. By W. S. Anderson and J. J. Hooper. Dec., 1917.
213. Observations and experiments on the bean and pea weevils in Kentucky. By Harrison Garman. Dec., 1917.
214. Commercial fertilizers. By H. E. Curtis, William Rodes, and O. S. Lee. Dec. 31, 1917.
215. Care and management of sheep in Kentucky. By E. S. Good and L. B. Mann. Jan., 1918.
216. Strawberries. By A. J. Olney and C. W. Mathews. Apr., 1918.
217. Profitable dairy-farm organization in Kentucky. By W. D. Nicholls and J. B. Hutson. July, 1918.
218. Some experiments with tomatoes. By A. J. Olney. Dec. 30, 1918.
219. Commercial Fertilizers. By H. E. Curtis and William Rodes. Dec. 31, 1918.
220. The effect of certain grain rations on the growth of the White Leghorn chick and their influence on subsequent egg production. (Research bulletin.) By C. D. Buckner, A. M. Peter, R. H. Wilkins, and J. J. Hooper. Mar. 29, 1919.
221. Marketing hemp. By J. R. Humphrey. June 27, 1919.
222. Tractor experience in Kentucky. By W. D. Nicholls. Sept., 1919.
223. Feeds and their use: Inspection and analyses. By J. D. Turner, H. D. Speare, and A. M. Peter. Oct., 1919.
224. Commercial fertilizers. By H. E. Curtis, William Rodes, and H. R. Allen. Dec., 1919.
225. The broods of the tobacco worms. (Research bulletin.) By Harrison Garman and H. H. Jewett. Mar., 1920.
226. Seed-corn infection with *Fusarium moniliforme* and its relation to the root and stalk rots. (Research bulletin.) By W. D. Valleau. May 1, 1920.
227. Observations on the structure and coloration of the larval corn-ear worm (*Chloridea obsoleta*), the bud worm (*C. virescens*) and a few other lepidopterous larvae. (Research bulletin.) By Harrison Garman. May, 1920.
228. Report on soil experiment fields; maintenance of fertility. By George Roberts and A. E. Ewan. July 1, 1920.

229. The cost of producing tobacco in Kentucky, preliminary report. By W. D. Nicholls and F. W. Peck. Oct., 1920.
230. Analyses of commercial fertilizers. By H. E. Curtis, H. R. Allen, and R. H. Ridgell. Dec. 31, 1920.

LOUISIANA.

No. 1. Sugar Experiment Station, Audubon Park, New Orleans.
No. 2. State Experiment Station, Baton Rouge.
No. 3. North Louisiana Experiment Station, Calhoun.
No. 4. Rice Experiment Station, Crowley.

BULLETINS [FIRST SERIES].

1. What has been done; what the station contemplates doing. By W. C. Stubbs. [n. d.]
2. [Fertilizers.] By W. C. Stubbs. [1886.]
3. [Summary of the work of the Sugar Experiment Station from its organization, Oct., 1885, to Apr., 1886]. By W. C. Stubbs.—Record of weather for March. By J. D. Stubbs. Apr., 1886.
4. [Oats.] By W. C. Stubbs. [July], 1886.
5. Sorghum. By W. C. Stubbs. Dec., 1886.
6. Corn. By W. C. Stubbs. Dec., 1886.
7. Sugar cane: Field experiments. By W. C. Stubbs. Jan., 1887.
8. Cotton. By W. C. Stubbs. 1887.
9. Analyses and valuation of fertilizers. By W. C. Stubbs. May, 1887.
10. Sugar cane: Sugar house and laboratory experiments, 1886. By W. C. Stubbs. 1887
11. Oats and potatoes. By W. C. Stubbs. 1887.
12. Sorghum. By W. C. Stubbs. Jan., 1888.
13. Cotton and its products. By W. C. Stubbs. [1888?]
14. Sugar cane: Field experiments. By W. C. Stubbs. Jan., 1888.
15. Rice. By W. C. Stubbs and H. S. Wilkinson. 1888. See 24.
16. Potatoes, tomatoes, peas, and small grains. By D. N. Barrow. 1888.
17. Ensilage. By W. C. Stubbs and B. B. Ross. 1888.
18. Analyses of commercial fertilizers. By W. C. Stubbs. 1888.
19. Sorghum: Field, laboratory, and sugar house results; diffusion process. By W. C. Stubbs. Dec., 1888.
20. Sugar cane: Field experiments. By W. C. Stubbs. Jan., 1889.
21. Report of the State experiment station for 1888. Jan., 1889.
22. Annual report of the North Louisiana Experiment Station, 1888. By W. C. Stubbs. Jan., 1889.
23. Sugar cane: Laboratory and sugarhouse results; diffusion process. By W. C. Stubbs. 1889.
24. Rice and its by-products. By B. B. Ross and W. C. Stubbs. n. d. See 77, second series.
25. Analyses of commercial fertilizers and other substances useful to agriculture. By W. C. Stubbs. 1888.
26. Report of the State Experiment Station for 1889. By W. C. Stubbs. Jan., 1890.
27. Report of the North Louisiana Experiment Station for 1889. By J. G. Lee. [1890?]
28. Report of the Sugar Experiment Station: Field experiments. By W. C. Stubbs. 1890.

BULLETINS, SECOND SERIES.[6]

1. Analyses of commercial fertilizers and other substances useful to agriculture. By W. C. Stubbs. 1890.
2. Texas screw worm, *Compsomyia* (*Lucilia*) *macellaria*. By H. A. Morgan. 1890.
3. Report of Horticultural Department. By H. A. Morgan and J. G. Lee. 1890.
4. Irish potatoes. By W. C. Stubbs, H. A. Morgan, and J. G. Lee. 1890.
5. Sugar making on a small scale with results at the North Louisiana Experiment Station. By W. C. Stubbs. 1891. Reprint, with additions, 1895. Revised reprint, 1902.
6. Results of field experiments with sugar cane. By W. C. Stubbs. 1891.
7. Report of the State Experiment Station for 1890. 1891.
8. Results of 1890 obtained on the North Louisiana Experiment Station. By J. G. Lee. 1891.
9. Sugar cane borer [*Chilo saccharalis*] and its parasite. By H. A. Morgan. 1891.
10. Systematic feeding of work stock a preventive of disease and some of the diseases of farm animals. By W. H. Dalrymple. 1891.
11. Report of the sugarhouse and laboratory for 1890. By W. C. Stubbs. 1891.
12. Analyses of commercial fertilizers and other substances useful to agriculture. By. W. C. Stubbs. 1891.
13. Sweet potatoes. H. A. Morgan and B. B. Ross. 1892.
14. Sugar cane: Field and laboratory results of 1891. By W. C. Stubbs. 1892.
15. Report of veterinarian, 1891. By W. H. Dalrymple. 1892.
16. Results of 1891 obtained on the North Louisiana Experiment Station. By J. G. Lee. 1892.
17. Results of 1891 obtained on the State Experiment Station. By D. N. Barrow. 1892.
18. Analyses of commercial fertilizers and other substances useful to agriculture. By W. C. Stubbs. 1892.
19. Forage crops, grasses, clovers, and small grains. By W. C. Stubbs. 1892.
20. Tobacco growing in Louisiana, with results of experiments at Calhoun. By W. C. Stubbs and J. G. Lee. 1893.
21. Report of results for 1892 at Calhoun. By J. G. Lee. 1893.
22. Results of the year 1892, [State Station]. By W. C. Stubbs [and others]. 1893.
23. Analyses of commercial fertilizers and other substances useful to agriculture. By W. C. Stubbs. 1893.
24. Sugar cane: Field experiments, physical and physiological. By W. C. Stubbs. 1894.
25. Tobacco. By J. G. Lee and W. C. Stubbs. 1894.
26. Sugar cane: Field experiments, varieties of cane, and striped versus purple. By W. C. Stubbs. 1894.
27. Horticulture: Results of the year 1893. By F. H. Burnette, Eugene Watson, and W. C. Stubbs. 1894.
28. Report of the farm [State Station]. 1893. By D. N. Barrow.—Report of the veterinarian [State Station]. By S. B. Staples.—Report of the entomologist [State Station]. By H. A. Morgan. 1894.
29. Report of results for 1893 at Calhoun, La. By J. G. Lee. 1894.
30. Sweet potatoes. By F. H. Burnette. 1894.
31. Domestic and commercial fertilizers: Results of five years with our staple crops. By W. C. Stubbs. 1894.
32. Ramie (*Boehmeria nivea*). By W. C. Stubbs. 1895.
33. Tobacco. By J. G. Lee. 1895.
34. Cattle feeding, with results of trials. By W. C. Stubbs and D. N. Barrow. 1895.

---

[6] The designation "Second series" was dropped after Bul. 33.

35. Report for 1894 [North Louisiana Experiment Station]. By J. G. Lee. 1895.
36. Horticulture: Results of the year 1894. By W. C. Stubbs, F. H. Burnette, and Eugene Watson. 1895.
37. Windrowed versus standing canes. By W. C. Stubbs. 1895.
38. The chemistry of sugar cane and its products. By G. C. Taylor, J. L. Beeson, and W. Maxwell. 1895.
39. Analyses of commercial fertilizers. By W. C. Stubbs. 1895.
40. Cowpea. By W. C. Stubbs, W. R. Dodson, and Maurice Bird. 1896.
41. Tobacco. Yellow leaf and cigar varieties. By J. G. Lee and D. N. Barrow. 1896.
42. Horticulture: Results of the year 1895. By [F. H. Burnette, Eugene Watson, and W. C. Stubbs]. 1896.
43. Bovine tuberculosis in north Louisiana. By [W. C. Stubbs], S. B. Staples, and W. H. Dalrymple. 1896.
44. Charbon, or anthrax. By S. B. Staples and W. H. Dalrymple. 1896.
45. Analyses of commercial fertilizers and Paris green. By [W. C. Stubbs.] 1896.
46. Leguminous root tubercles. By W. R. Dodson. 1897.
47. Results of experiments at State experiment station, Baton Rouge, La., in corn, cotton, forage crops, tobacco, etc. By D. N. Barrow. 1897.
48. Report of the entomologist. By H. A. Morgan. 1897.
49. Analyses of commercial fertilizers and Paris green. By W. C. Stubbs. 1897.
50. Red rice. By W. R. Dodson. 1898.
51. Cattle tick and Texas fever. By W. H. Dalrymple, H. A. Morgan, and W. R. Dodson. 1898.
52. Report for 1896 and 1897 of the horticultural department of State experiment stations. By W. C. Stubbs, F. H. Burnette, and Eugene Watson. 1898.
53. Grasses, clovers, forage, and economic crops. By W. R. Dodson and W. C. Stubbs. 1898.
54. Analyses of commercial fertilizers and Paris green. By W. C. Stubbs. 1898.
55. Alfalfa, Spanish peanuts, Unknown cowpea, and velvet beans. By W. C. Stubbs. 1899.
56. Ticks and Texas fever. By H. A. Morgan. 1899.
57. Immunization against Texas fever by blood inoculation. By W. R. Dodson, W. H. Dalrymple, and H. A. Morgan. 1899.
58. Analyses of commercial fertilizers and Paris green. By W. C. Stubbs and W. T. Jones. 1899.
59. Sugar cane: Field and laboratory results for ten years. By W. C. Stubbs. 1900.
60. Charbon. Further investigation and suggestions with summary and conclusions. By W. H. Dalrymple. 1900.
61. Rice: Preparation, cultivation, flooding, and harvesting. By W. C. Stubbs.—Noxious weeds in the rice fields. By W. R. Dodson. 1900. See 77.
62. Report of results for 1899 at Calhoun. By J. G. Lee. 1900.
63. Analyses of commercial fertilizers and Paris green. By W. C. Stubbs.—Inspection of fertilizers and Paris green, season of 1899–1900. Sept., 1900.
64. Report of the veterinarian. By W. H. Dalrymple. 1901.
65. Analyses of commercial fertilizers and Paris green. By W. C. Stubbs and C. H. O'Rourke. 1901.
66. Sugar cane: Experiments in cultivation. By W. C. Stubbs. 1901.
67. Broom corn: How to grow and cure it. By W. R. Dodson. 1902.
68. Home-grown vs. purchased seed. By W. C. Stubbs, F. H. Burnette, and Eugene Watson. 1902.
69. Pecans. By F. H. Burnette, W. C. Stubbs, and H. A. Morgan. 1902.
70. Cane borer (*Diatroea saccharalis*). By W. C. Stubbs and H. A. Morgan. 1902.
71. Report [of North Louisiana Experiment Station], 1901. By D. N. Barrow. 1902.
72. Forage crops, grasses, alfalfa, clovers, etc. By W. R. Dodson. 1902.
73. Analyses of commercial fertilizers and Paris green. By W. C. Stubbs [and others]. 1902.
74. Sheep. By W. H. Dalrymple. 1903.
75. Preservation of cane sirup. By W. R. Dodson.—The enzymes of the sugar cane. By C. A. Browne, jr.—Special device for keeping sirup in a sterile condition; relation of bacteria to the inversion of crystallized sugars. By W. R. Dodson. 1903.
76. Analyses of commercial fertilizers and Paris green. By W. C. Stubbs.—[Report covering seventeen years of work of the inspection of commercial fertilizers under the supervision of the Louisiana State Board of Agriculture and Immigration from 1886 to 1903.] By C. H. O'Rourke. 1903.
77. Rice. By W. C. Stubbs, W. R. Dodson, and C. A. Browne, jr. 1904. Supersedes 15 and 24, first series, and 61. See 172.
78. Comparative results of seedling sugar canes, D. 74 and D. 95 with our home sugar canes (Louisiana striped and Louisiana purple). By W. C. Stubbs and R. E. Blouin. [1904?]
79. Results of experiments with nodule-disease of the intestines of sheep. By W. H. Dalrymple. Apr., 1904.
80. Analyses of commercial fertilizers and Paris green. By W. C. Stubbs.—Annual fertilizer report for the season 1903–4. By C. H. O'Rourke. [1905.]
81. Results of experiments in production and marketing fruits and vegetables, and canning fruits and vegetables on a small scale, at the North Louisiana Experiment Station, Calhoun, La. By D. N. Barrow and E. J. Watson. 1905.
82. The Texas fever cattle tick situation, and the eradication of the tick by a pasture rotation system. By H. A. Morgan. 1905.
83. Results of further experiment with nodule disease of the intestines of sheep: "Bare-lot" method of raising lambs. By W. H. Dalrymple. 1905.
84. Texas fever. By W. H. Dalrymple. Oct., 1905.
85. Black-leg. By W. H. Dalrymple. Mar., 1906.
86. Our available stock foods. By W. H. Dalrymple. Aug., 1906.
87. Analyses of commercial fertilizers and Paris green. By J. E. Halligan [and others]. Sept., 1906.
88. Analyses of commercial feeding stuffs. By J. E. Halligan [and others]. Sept., 1906.
89. Nodule disease of the intestines of sheep: "Bare-lot" method of raising lambs, results of further experimental work. By W. H. Dalrymple. Dec., 1906.
90. Summary of results with vegetables and fruits at the North Louisiana Experiment Station from 1892 to 1907. By E. J. Watson. Jan., 1907.
91. The chemistry of the sugar cane and its products in Louisiana. By C. A. Browne, jr., and R. E. Blouin. 1907.
92. Experiments in the late planting of cotton to avoid boll weevil damage during 1906. By C. W. Flynn, jr. May, 1907.
93.[1] Second report upon the horseflies of Louisiana. By J. S. Hine. June, 1907.
P. E. Archinard, and J. A. Hall, jr. July, 1907.

[1] First report was published concurrently as Circ. 6 of the Louisiana Crop Pest Commission and Bul. 5 of the Gulf Biologic Station.

94. The effects on the human system of Louisiana manufactured sirups and molasses. By R. E. Blouin, P. E. Archinard, and J. A. Hall, jr. July, 1907.
95. Bare lot versus grass lot in relation to stomachal and intestinal parasitism of lambs—further experiments. By W. H. Dalrymple. Sept., 1907.
96. Cotton wilt. By H. R. Fulton. Sept., 1907.
97. Analyses of commercial fertilizers and Paris green. By J. E. Halligan [and others]. Sept., 1907.
98. Analyses of commercial feeding stuffs. By J. E. Halligan [and others]. Sept., 1907.
99. Japanese persimmons. By F. H. Burnette. Dec., 1907.
100. The root disease of sugar cane. By H. R. Fulton. Jan., 1908.
101. Diseases of pepper and beans. By H. R. Fulton. Jan., 1908.
102. Report of dairy herds and their milk production at Hammond, La., and vicinity. By T. E. Woodward and J. G. Lee, jr. Mar., 1908.
103. Investigations on the use of sulphur and its combinations in the sugar house. By F. Zerban. Mar., 1908.
104. Feeding "blackstrap" molasses to young calves. By T. E. Woodward and J. G. Lee, jr. Mar., 1908.
105. Diseases affecting rice in Louisiana. By H. R. Fulton. Apr., 1908.
106. A preliminary report on the so-called cerebro-spinal meningitis of horses. By H. K. Milks. July, 1908.
107. Preliminary tests of sugar house machinery. By E. W. Kerr. 1908.
108. A preliminary report on some diseases of chickens. By H. J. Milks. Aug., 1908.
109. Experiments with *Bacterium anthracia*, anthrax vaccines and hyperimmunization. By H. J. Milks. Aug., 1908.
110. Comparison of cottonseed meal and hulls with cold pressed cake as a dairy feed. By J. G. Lee and J. E. Woodward. Sept., 1908.
111. Rotation experiments with cotton, corn, cowpeas, and oats. By W. R. Dodson. Sept., 1908.
112. Orchard report of Baton Rouge Station. Oct., 1908.
113. Analyses of commercial fertilizers and Paris green. By J. E. Halligan [and others]. Sept., 1908.
114. Analyses of commercial feeding stuffs. By J. E. Halligan [and others]. Sept., 1908.
115. The principles and practice of feeding, including our available stock foods. By W. H. Dalrymple. May, 1909. Superseded by 148.
116. Preliminary report on the anthracnose or pod spot disease of beans. By C. W. Edgerton. June, 1909.
117. An experimental study of bagasse and bagasse furnaces. By E. W. Kerr and E. M. Percy. Aug., 1909.
118. Corn. By W. R. Dodson and V. L. Roy. Aug., 1909.
119. The bean anthracnose. By C.W. Edgerton. Apr., 1910.
120. Some sugar-cane diseases. By C. W. Edgerton. July, 1910.
121. A preliminary report on the sugar-cane mealy-bug (*Pseudococcus calceolariae* Mask.). By J. B. Garrett July, 1910.
122. Rough rice as feed for horses and mules. By W. H. Dalrymple. July, 1910.
123. Some experiments in grazing and soiling. By S. E. McClendon. Oct., 1910.
124. Pt. I, Breeds of hogs. By W. H. Dalrymple.—Pt. II, The best crops to grow for hogs, and other data. By W. R. Dodson.—Portable fences. By S. E. McClendon. Nov., 1910.
125. The bacterial deterioration of sugars. By W. L. Owen. Jan., 1911.
126. Diseases of the fig tree and fruit. By C. W. Edgerton. Mar., 1911.
127. Sugar cane seedlings. By H. P. Agee. May, 1911.
128. Bagasse drying. By E. W. Kerr and H. A. Nadler. June, 1911.
129. Cane sirup making. By H. P. Agee. July, 1911.
130. Lespedeza or Japan clover. By W. R. Dodson [and others]. Sept., 1911.
131. Experiments with oil burning in boiler furnaces. By E. W. Kerr and H. A. Nadler. Sept., 1911.
132. A simple, effective, and inexpensive method of treating the arsenical dipping solution before emptying vat for cleaning. By W. H. Dalrymple and A. P. Kerr. Oct., 1911.
133. The red rot of sugar cane. A report of progress. By C. W. Edgerton. Dec., 1911.
134. Some studies on cotton-seed meal poisoning. By C. W. Edgerton and Harry Morris. Mar., 1912.
135. Investigations on methods of analysis of cane products. By W. E. Cross. Dec., 1912.
136. Carrion feeders as disseminators of anthrax or charbon. By Harry Morris and W. H. Dalrymple.
137. The rots of the cotton boll. By C. W. Edgerton. Dec., 1912.
138. An experimental study of heat transmission and entrainment in a vaccum evaporator. (Progress report.) By E. W. Kerr and A. J. Isacks. Jan., 1913.
139. The bean blight and preservation and treatment of bean seed. By C. W. Edgerton and C. C. Moreland. Jan., 1913.
140. Preliminary report on winter cauliflower. By G. L. Tiebout. May, 1913.
141. Vegetable culture in north Louisiana. By E. J. Watson. July, 1913.
142. Diseases of the tomato in Louisiana. By C. W. Edgerton and C. C. Moreland. Oct., 1913. Abridged form, Apr., 1914.
143. Silos and ensilage. By W. R. Dodson and C. H. Staples. Mar., 1914.
144. Clarification of Louisiana cane juices. By W. E. Cross. Apr., 1914.
145. Suppression of the cottony cushion scale in Louisiana. By E. S. Tucker. Apr., 1914.
146. Bacteriological investigations of sugar cane products. By W. L. Owen. May, 1914.
147. Paille fine grass. By S. M. Tracy. May, 1914.
148. Stock feeding. By W. H. Dalrymple. May, 1914. Supersedes 115.
149. Performance tests of sugar house heating and evaporating apparatus. By E. W. Kerr, J.F. Gunther, and W. A. Rolston. Aug., 1914.
150. Citrus canker. By C. W. Edgerton. Oct., 1914.
151. Cattle feeding on the plantation and farm. By W. H. Dalrymple. Jan., 1915.
152. Anthrax or charbon: Points of popular interest. By Harry Morris. Feb., 1915.
153. The comparative value of various germicides for use in cane sugar factories. By W. L. Owen. Feb., 1915.
154. Protecting cabbage and cauliflower from attacks by worms. By E. S. Tucker. June, 1915.
155. Experiments on varietal resistance to the bean and cotton anthracnose diseases. By C. W. Edgerton and C. C. Moreland. Mar., 1916.
156. The direct determination of sucrose in the presence of reducing sugars. By M. A. Schneller. July, 1916.
157. The coloring matter of cane juices. A preliminary report. By M. A. Schneller. Aug., 1916.
158. Tests of the power and steam consumption of sugar factories. By E. W. Kerr, W. A. Rolston, and S. J. Webre. Sept., 1916.
159. Experimental studies of vacuum juice heaters. By E. W. Kerr and S. J. Webre. Sept., 1916.
160. [i. e. 160]. Tests of boilers with bagasse as fuel. By E. W. Kerr. Oct., 1916.
161. Vegetable decolorizing carbons and their use in the cane sugar industry. By F. W. Zerban. Feb., 1918.
162. The deterioration of cane sugars in storage; its causes and suggested measures for its control. By W. L. Owen. Mar., 1918.
163. Blood-sucking insects as transmitters of anthrax or charbon. By Harry Morris. Mar., 1918.

164. Delayed ripening of tomatoes caused by spraying with Bordeaux mixture. By C. W. Edgerton. Sept., 1918.
165. The color of sugar-cane products and decolorization in factory practice. By F. W. Zerban and E. C. Freeland. Mar., 1919.
166. The deterioration of cane sugar by fungi. By Nicholas Kopeloff and Lillian Kopeloff. Feb., 1919.
167. Studies on the preparation of vegetable decolorizing carbons for the cane sugar industry. By F. W. Zerban, E. C. Freeland, and D. D. Sullivant. May, 1919.
168. Anthrax: Transmission of infection by nonbiting flies. By Harry Morris. May, 1919.
169. Effect of fungi on the germination of sugar cane. By C. W. Edgerton and C. C. Moreland. Jan., 1920.
170. Factors determining the keeping quality of cane sugar (with a chart for prediction). By Nicholas Kopeloff and Lillian Kopeloff. July, 1920.
171. The amount of salt in irrigation water injurious to rice. By F. C. Quereau. July, 1920.
172. Rice investigations. By F. C. Quereau. Sept., 1920. A revision of 77.
173. The clarification of cane juice without chemical treatment. By F. W. Zerban. Mar., 1920.
174. Tomato wilt. By C. W. Edgerton and C. C. Moreland. Apr., 1920.
175. The prevention of sugar deterioration. By Nicholas Kopeloff, C. J. Welcome, and Lillian Kopeloff. Sept., 1920.
176. A method of selecting L 511 cane free of the mosaic disease for planting purposes. By C. W. Edgerton. Sept., 1920.
177. Chemical composition of some Louisiana soils as to series and texture. By S. S. Walker. Aug., 1920.

SPECIAL BULLETIN.

The orange and other citrus fruits from seed to market, with insects beneficial and injurious, with remedies for the latter. By W. C. Stubbs and H. A. Morgan. 1893.

GEOLOGY AND AGRICULTURE.

I. A preliminary report upon the hills of Louisiana north of the Vicksburg, Shreveport & Pacific Railroad. By O. Lerch. 1892.
II. A preliminary report upon the hills of Louisiana south of the Vicksburg, Shreveport & Pacific Railroad. By O. Lerch. 1893.
III. A preliminary report upon the Florida parishes of east Louisiana and the bluff, prairie, and hill lands of southwest Louisiana. By W. W. Clendenin and W. R. Dodson. [1896.]
IV. A preliminary report upon the bluff and Mississippi alluvial lands of Louisiana. By W. W. Clendenin and W. R. Dodson. [1896].
V. A preliminary report on the geology of Louisiana. By G. D. Harris [and others. 1899].
VI. A report on the geology of Louisiana, containing special papers by different authors. By G. D. Harris. [and others]. 1902.

GEOLOGICAL SURVEY BULLETINS.[8]

1. A report on the underground waters of Louisiana. By G. D. Harris [and others]. 1905.
2. A report on terrestrial magnetism and meridian line work in Louisiana. By L. A. Bauer [and others]. 1905.
3. A report on the establishment of tide gage work in Louisiana. By G. D. Harris. 1905.
4. Geology and underground water resources of northern Louisiana with notes on adjoining districts By A. C. Veatch. 1906.
5. Notes on the geology of the Winnfield sheet. By G. D. Harris. 1907.
6. Cartography of southwestern Louisiana with special reference to the Jennings sheet. By G. D. Harris. 1907.
7. Rock salt, its origin, geological occurrences and economic importance in the State of Louisiana. By G. D. Harris, C. J. Maury, and L. Reinecke. 1908.
8. Oil and gas in northwestern Louisiana with special reference to the Caddo field. By G. D. Harris, I. Perrine, and W. E. Hopper. 1909.

MAINE.

Maine Agricultural Experiment Station, Orono.

BULLETINS (FIRST SERIES).[9]

1. Analyses and valuation of commercial fertilizers. By Walter Balentine. May, 1885.
2. Remarks on valuation of commercial fertilizers. By W. H. Jordan. Aug., 1885.
3. Analyses of wood ashes from various sources. [1885?]
4. Analyses of harbor mud and wood ashes. By W. H. Jordan. Dec., 1885.
5. Examination of condimental cattle foods. By W. H. Jordan. Jan., 1886.
6. The valuation of fertilizers. By W. H. Jordan. Apr., 1886.
7. [Analyses and valuations of fertilizers]. By W. H. Jordan. Apr., 1886.
8. [Analyses and valuations of fertilizers]. By W. H. Jordan. May, 1886.
9. [Fertilizers analyzed in 1886]. By W. H. Jordan. July, 1886.
10. [Analyses of molasses]. By W. H. Jordan. Oct., 1886.
11. [Plan of field experiments with fertilizers]. By W. H. Jordan. Oct., 1886.
12. The comparative production from different forms of phosphoric acid. By W. H. Jordan. Oct., 1886.
13. [Experiments with fertilizers]. By W. H. Jordan. Oct., 1886.
14. [Analyses of Paris green, London purple, Hammond's slug shot]. By W. H. Jordan. Jan., 1887.
15. [Experiments with foods for poultry]. By W. H. Jordan. Feb., 1887.
16. [Relative value of cottonseed meal and linseed meal for feeding purposes]. By W. H. Jordan. Feb., 1887.
17. [Analyses of clam shells; Bowker's fine ground bone]. By W. H. Jordan. Mar., 1887.
18. Potatoes; oats; barley. By W. H. Jordan. Apr., 1887.
19. [Analyses and valuations of fertilizers]. By W. H. Jordan. Apr., 1887.
20. [Analyses and valuations of fertilizers]. By W. H. Jordan. May., 1887.
21. The condition of the station; distribution of bulletins and reports. By W. H. Jordan. Dec., 1887.
22. Organization and work of the station. By W. H. Jordan. Mar., 1888.
23. Fertilizers. By W. H. Jordan. Apr., 1888.

---

[8] Superseding the series "Geology and Agriculture;" work reported in Buls. 1–8 was done under the direction of the experiment station.

[9] Bulletins 1–20, First Series, were issued as newspaper slips.

24. Tests of varieties. By W. H. Jordan.—Seeds and injurious insects. By F. L. Harvey. May, 1888.
25. [Analysis and valuation of commercial fertilizers sold in the State]. By W. H. Jordan. Aug., 1888.
26. The composition and digestibility of certain cattle foods. Oct., 1888.

BULLETINS (SECOND SERIES).[10]

1. Partial statement of analysis of commercial fertilizers for 1889. By W. H. Jordan. May, 1889.
2. The apple maggot (*Trypeta pomonella* Walsh); the potato rot (*Phytophthora infestans* De Bary (*Peronospora infestans* Mont.). By F. L. Harvey. [1889?]
3. The Babcock milk test adapted to testing cream. By J. M. Bartlett. Sept., 1891.
4. Testing cream and milk fat test and lactometer. By J. M. Bartlett. [1893?]
5. Waste of fat in skimmed milk by the deep-setting process. By W. H. Jordan. Jan., 1894.
6. Fruit culture: Varieties. By W. M. Munson. Jan., 1894.
7. Inspection of fertilizers. By W. H. Jordan, J. M. Bartlett, and L. H. Merrill. Feb., 1894.
8. Spraying experiments. By W. M. Munson. Mar., 1894.
9. Tomatoes. By W. M. Munson. Mar., 1894.
10. Cauliflowers. By W. M. Munson. Apr., 1894.
11. Corn as a silage crop. By W. H. Jordan. Apr., 1894.
12. Potatoes: A comparison of the trench system with ordinary culture. By W. M. Munson. May, 1894.
13. The suppression of bovine tuberculosis and glanders. By F. L. Russell. June, 1894.
14. Inspection of fertilizers. By W. H. Jordan, J. M. Bartlett, and L. H. Merrill. Sept., 1894.
15. A scheme for paying for cream by the Babcock test in butter factories. J. M. Bartlett. Oct., 1894.
16. Investigation on the foraging powers of some agricultural plants for phosphoric acid. By W. Balentine. Nov., 1894.
17. Important facts about corn. By W. H. Jordan. Mar., 1895.
18. Inspection of fertilizers, 1895. By W. H. Jordan, J. M. Bartlett, and L. H. Merrill. Mar., 1895.
19. A discussion of certain commercial articles: 1, Fertilizers. By W. H. Jordan. Mar., 1895.
20. A discussion of certain commercial articles: 2, Foods. By W. H. Jordan. Mar., 1895.
21. Notes on small fruits. By W. M. Munson. Apr., 1895.
22. Inspection of fertilizers. By W. H. Jordan, J. M. Bartlett, and L. H. Merrill. 1895.
23. Preservation of cream for market. By F. L. Russell. Feb., 1896.
24. Cabbages. By H. P. Gould. Mar., 1896.
25. Inspection of fertilizers, 1896. By W. H. Jordan, J. M. Bartlett, and L. H. Merrill. Mar., 1896.
26. Inspection of glassware used by creameries and butter factories to determine the value of cream and milk. By J. M. Bartlett. Mar., 1896.
27. Peas; sweet corn. By H. P. Gould. Mar., 1896.
28. Potato rot: Bordeaux mixture and fungiroid as preventives. By H. P. Gould. Mar., 1896.
29. Notes on spraying. By W. M. Munson. Apr., 1896.
30. Fertilizer inspection. By C. D. Woods, J. M. Bartlett, and L. H. Merrill. Oct., 1896.
31. Modification of the Babcock method. By J. M. Bartlett. Nov., 1896.
32. Three troublesome weeds: Orange hawkweed, wild carrot, buffalo bur. By F. L. Harvey. Jan., 1897.
33. Fertilizer inspection. By C. D. Woods and J. M. Bartlett. Mar., 1897.
34. Box experiments with phosphates. By L. H. Merrill. Apr., 1897.
35. The currant fly, *Epochra canadensis* Loew. By F. L. Harvey. May, 1897.
36. Testing seeds. By C. D. Woods. Aug., 1897.
37. Feeding-stuff inspection. By C. D. Woods. Aug., 1897.
38. Fertilizer inspection. By C. D. Woods and J. M. Bartlett. Oct., 1897.
39. Stock-feeding suggestions. By J. M. Bartlett. Nov., 1897.
40. Celery. By W. M. Munson. Dec., 1897.
41. Dehorning cows. By G. M. Gowell and F. L. Russell. Jan., 1898.
42. Ornamenting home grounds. By W. M. Munson. Feb., 1898.
43. Fertilizer inspection. By C. D. Woods [and others]. Mar., 1898.
44. Feeding-stuff inspection. By C. D. Woods [and others]. May, 1898.
45. Fertilizer inspection. By C. D. Woods [and others]. Oct., 1898.
46. Ornamental plants for Maine. By W. M. Munson. Nov., 1898.
47. Wheat offals sold in Maine in 1898. By C. D. Woods [and others]. Dec., 1898.
48. Feeding-stuff inspection. By C. D. Woods [and others]. Jan., 1899.
49. Care of orchards. By W. M. Munson. Feb., 1899.
50. Fertilizer inspection. By C. D. Woods. Mar., 1899.
51. Feeding-stuff inspection. By C. D. Woods. Apr., 1899.
52. The spraying of plants. By W. M. Munson. May, 1899.
53. Fertilizer inspection. By C. D. Woods and J. M. Bartlett. Sept., 1899.
54. Nuts as food. By C. D. Woods and L. H. Merrill. Oct., 1899.
55. Cereal breakfast foods. By C. D. Woods and L. H. Merrill. Nov., 1899.
56. Apple insects of Maine. By F. L. Harvey and W. M. Munson. Dec., 1899.
57. Experiments with potatoes. By C. D. Woods and J. M. Bartlett. Dec., 1899.
58. Finances, meteorology, and index. Dec., 1899.
59. Feeding-stuff inspection. By C. D. Woods and J. M. Bartlett. Feb., 1900.
60. Fertilizer inspection. By C. D. Woods. Mar., 1900.
61. Notes on insects and plants. By F. L. Harvey. Mar., 1900.
62. The Maine Experiment Station. By C. D. Woods. Apr., 1900.
63. Feeding-stuff inspection. By C. D. Woods and J. M. Bartlett. Apr., 1900.
64. Poultry experiments in 1899: Feeding chickens for growth; breeding for egg production. By G. M. Gowell. June, 1900.
65. Coffee substitutes. By C. D. Woods and L. H. Merrill.—Nut oils. By L. H. Merrill.—Testing seeds. By C. D. Woods.—Potato pomace. By J. M. Bartlett. June, 1900.
66. Fertilizer inspection. By C. D. Woods and J. M. Bartlett. Aug., 1900.
67. Digestion experiments with sheep. By J. M. Bartlett.—Note on heats of combustion. By L. H. Merrill. Sept., 1900.
68. Experiments with insecticides upon potatoes. By C. D. Woods. Oct., 1900.
69. Finances, meteorology, index. Dec., 1900.
70. Oats as grain and fodder. By J. M. Bartlett. Jan., 1901.
71. Feeding-stuff inspection. By C. D. Woods and J. M. Bartlett. Feb., 1901.
72. Fertilizer inspection. By C. D. Woods. Mar., 1901.

[10] The designation "Second series" was dropped after Bul. 25. Bulletins of this series, with the usual exception of those on inspection work, were reprinted in the annual reports of the station from 1893 to 1898, inclusive, and in the annual reports of the Maine Board of Agriculture (after 1901, Commissioner of Agriculture) from 1893 to 1906, inclusive.

73. Experiments with fungicides upon potatoes in 1900: How to fight potato enemies. By C. D. Woods. Apr., 1901.
74. The manurial value of ashes, "mucks," sea weeds, and bone. By C. D. Woods. May, 1901.
75. Analyses of miscellaneous food materials. By C. D. Woods and L. H. Merrill. July, 1901.
76. The horticultural status of the genus Vaccinium. By W. M. Munson. Aug., 1901.
77. Fertilizer inspection. By C. D. Woods and J. M. Bartlett. Sept., 1901.
78. Finances, meteorology, index. Dec., 1901.
79. Poultry experiments in 1900 and 1901. By G. M. Gowell. Jan., 1901.
80. Feeding-stuff inspection. By C. D. Woods and J. M. Bartlett. Feb., 1902.
81. Fertilizer inspection. By C. D. Woods and J. M. Bartlett. Mar., 1902.
82. Orchard notes. By W. M. Munson. Apr., 1902.
83. The grass thrips. By L. R. Cary. June, 1902.
84. Cereal breakfast foods. By L. H. Merrill and E. R. Mansfield. July, 1902.
85. Fertilizer inspection. By C. D. Woods and J. M. Bartlett. Oct., 1902.
86. Variation in *Trillium grandiflorum* Salisb. By H. W. Britcher. Nov., 1902.
87. Potato insecticides and fungicides in 1902; oat smut and its prevention. By C. D. Woods. Dec., 1902.
88. Finances, meteorology, index. Dec., 1902.
89. Experiments in orchard culture. By W. M. Munson. Feb., 1903.
90. Fertilizer inspection. By C. D. Woods and J. M. Bartlett. Mar., 1903.
91. The chinch bug in Maine. By H. W. Britcher. Apr., 1903.
92. Feeding-stuff inspection. By C. D. Woods and J. M. Bartlett. May, 1903.
93. Poultry experiments in 1902. By G. M. Gowell. July, 1903.
94. Fertilizer inspection. By C. D. Woods and J. M. Bartlett. Aug., 1903.
95. Dandelions, hawkweeds, ginseng, cankerworms. By W. M. Munson. Sept., 1903.
96. Plant-house Aleyrodes. By L. R. Cary. Oct., 1903.
97. Notes and experiments upon the wheats and flours of Aroostook County. By C. D. Woods and L. H. Merrill. Nov., 1903.
98. Potato experiments in 1903; notes on the angora goat. C. D. Woods.—The preservation of hen manure. By C. D. Woods and J. M. Bartlett. Dec., 1903.
99. Finances, meteorology, index. Dec., 1903.
100. Poultry management. By G. M. Gowell. Feb., 1904.
101. Fertilizer inspection. By C. D. Woods and J. M. Bartlett. Mar., 1904.
102. Feeding-stuff inspection. By C. D. Woods and J. M. Bartlett. Apr., 1904.
103. Entire wheat flour. By C. D. Woods and L. H. Merrill. May, 1904.
104. A study of reciprocal crosses. By M. B. Cummings. June, 1904.
105. Fertilizer inspection. By C. D. Woods and J. M. Bartlett. July, 1904.
106. Soy beans in Maine. By C. D. Woods and J. M. Bartlett.—Feeding experiments with cows; alfalfa. By C. D. Woods. Sept. 1904.
107. Home-mixed fertilizers. By C. D. Woods. Oct., 1904.
108. Brown-tail moth and other orchard moths. By Edith M. Patch. Nov., 1904.
109. Apple maggot. Edith M. Patch and W. M. Munson.—Insect notes for 1904. By Edith M. Patch. Dec., 1904.
110. Digestion experiments with sheep and steers. By J. M. Bartlett. Dec., 1904.
111. Finances, meteorology, index. Dec., 1904.
112. Potato experiments in 1904. By C. D. Woods. Jan., 1905.
113. Summary of experiments in practical horticulture; red clover from various sources. By W. M. Munson. Feb., 1905.
114. Fertilizer inspection. By C. D. Woods. Mar., 1905.
115. Feeding-stuff inspection. By C. D. Woods and J. M. Bartlett.—Cottonseed meal. By J. M. Bartlett. Apr., 1905.
116. Food inspection. By C. D. Woods and L. H. Merrill. May, 1905.
117. Poultry experiments. By G. M. Gowell. July, 1905.
118. Cereal foods. By L. H. Merrill. July, 1905.
119. Food inspection. By C. D. Woods and L. H. Merrill. Oct., 1905.
120. Fertilizer inspection. By C. D. Woods and J. M. Bartlett. Dec., 1905.
121. The cottony grass scale (*Eriopeltis festucae* Fonsc.). By Edith M. Patch. Dec., 1905.
122. Experiments in orchard culture. By W. M. Munson. Dec., 1905.
123. Strawberry crown girdler (*Otiorhynchus ovatus* Linn.). By Edith M. Patch. Dec., 1905.
124. Finances, meteorology, index. Dec., 1905.
125. Seed inspection. By C. D. Woods and Bessie G. Tower. Feb., 1906.
126. Field experiments in 1905. By C. D. Woods and J. M. Bartlett.—The effect of the ration on the value of the manure. By J. M. Bartlett. Feb., 1906.
127. Fertilizer inspection. By C. D. Woods and J. M. Bartlett. Mar., 1906.
128. Orchard notes. By W. M. Munson. Mar., 1906.
129. Feeding-stuff inspection. By C. D. Woods and J. M. Bartlett. Apr., 1906.
130. Poultry experiments, 1905–6. By G. M. Gowell. June, 1906.
131. Indian corn as food for man; digestion experiments with chestnuts. By L. H. Merrill. Oct., 1906.
132. Plant breeding in its relation to American pomology. By W. M. Munson. Nov., 1906.
133. Fertilizer inspection. By C. D. Woods and J. M. Bartlett. Nov., 1906.
134. Insect notes for 1906. By Edith M. Patch. Dec., 1906.
135. Food inspection. By C. D. Woods and J. M. Bartlett. Dec., 1906.
136. Food inspection. By C. D. Woods and J. M. Bartlett. Dec., 1906.
137. Circulars, finances, meteorology, index. Dec., 1906.
138. Seed inspection. By C. D. Woods and R. L. Hammond. Feb., 1907.
139. Orchard notes, 1906. By W. M. Munson. Mar., 1907.
140. Fertilizer inspection. By C. D. Woods and J. M. Bartlett. Mar., 1907.
141. Potato-scab. By W. J. Morse. Mar., 1907.
142. Feeding-stuff inspection. By C. D. Woods and J. M. Bartlett. Apr., 1907.
143. Preliminary notes on the seedling apples of Maine. By W. M. Munson. May, 1907.
144. Poultry experiments, 1906–7. By G. M. Gowell. June, 1907.
145. Food inspection. By C. D. Woods and J. M. Bartlett. Sept., 1907.
146. Fertilizer inspection. By C. D. Woods and J. M. Bartlett. Oct., 1907.
147. The potato plant louse (*Nectarophora solanifolii* Ashmead). By Edith M. Patch. Nov., 1907.
148. Insect notes for 1907. By Edith M. Patch. Nov., 1907.
149. Potato diseases in 1907. By W. J. Morse. Dec., 1907.
150. Finances, meteorology, index. Dec., 1907.
151. Food and drug inspection. By C. D. Woods and J. M. Bartlett. Jan., 1908.
152. Seed inspection. By C. D. Woods and R. L. Hammond. Feb., 1908.
153. Fertilizer inspection. By C. D. Woods and J. M. Bartlett. Mar., 1908.
154. Paris green; Bordeaux mixture. By C. D. Woods and H. H. Hanson. Apr., 1908.

155. Orchard notes, 1907. By W. M. Munson. Mar., 1908.
156. Feeding stuff inspection. By C. D. Woods and J. M. Bartlett. Apr., 1908.
157. Poultry work at the Maine station. By C. D. Woods. May, 1908. A resumé of previous work.
158. Food of man studies. By L. H. Merrill. June, 1908.
159. Appliances and methods for pedigree poultry breeding. By Raymond Pearl and F. M. Surface. July, 1908. See 165.
160. Fertilizer inspection. By C. D. Woods and J. M. Bartlett. Oct., 1908.
161. The saddled prominent (*Heterocampa guttivitta* Walker). By Edith M. Patch. Nov., 1908.
162 Insect notes for 1908. By Edith M. Patch. Dec., 1908.
163. Finances, meteorology, index. Dec., 1908.
164. Notes on plant diseases, 1908. By W. J. Morse. Jan., 1909.
165. Poultry notes. By Raymond Pearl and F. M. Surface. Feb., 1909. See also 280.
166. Inheritance of fecundity. By Raymond Pearl and F. M. Surface. Mar., 1909.
167. Field experiments, 1906-8. By C. D. Woods and J. M. Bartlett. May, 1909.
168. The fertility and hatching of eggs. By Raymond Pearl and F. M. Surface. Sept., 1909.
169. Two epidemics of potato blight and rot. By W. J. Morse. Nov., 1909.
170. Apple diseases caused by *Coryneum foliicolum* Fckl. and *Phoma mali* Schulz et Sacc. By C. E. Lewis. Nov., 1909.
171. The pine-leaf and the green-winged chermes. By Edith M. Patch. Nov., 1909.
172. The Mycetophilidae of North America, Part I. By O. A. Johannsen. Dec., 1909.
173. Chermes of Maine conifers. By Edith M. Patch. Dec., 1909.
174. Blackleg: A bacterial disease of the stem and tuber of the Irish potato. By W. J. Morse. Dec., 1909.
175. Finances, meteorology, index. Dec., 1909.
176. The ligaments of the oviduct of the domestic fowl. By M. R. Curtis. Jan., 1910.
177. Insect notes for 1909. By O. A. Johannsen Feb., 1910.
178. A new species of *Endomyces* from decaying apples. By C. E. Lewis. Apr., 1910.
179. Poultry notes. By Raymond Pearl and F. M. Surface. May, 1910.
180. The Mycetophilidae of North America, Part II. By O. A. Johannsen. June, 1910.
181. Gall aphids of the elm. By Edith M. Patch. May, 1910.
182. Four rare aphid genera from Maine. By Edith M. Patch. June, 1910.
183. Experiments in breeding sweet corn. By Raymond Pearl and F. M. Surface. Sept., 1910.
184. Digestion experiments with poultry. By J. M. Bartlett. Oct., 1910.
185. Maine apple diseases. By W. J. Morse and C. E. Lewis. Dec., 1910.
186. Finances, meterology, index. Dec., 1910.
187. Insect notes for 1910. By O. A. Johannsen. Jan., 1911.
188. Field experiments. By C. D. Woods. Feb., 1911.
189. Orchard spraying experiments. By W. W. Bonns. Apr., 1911.
190. Two species of Macrosiphum: *Macrosiphum destructor* and *Macrosiphum solanifolii*. By Edith M. Patch. June, 1911.
191. Method for determining weight of parts of eggs. By M. R. Curtis. July, 1911.
192. Breeding poultry for egg production. By Raymond Pearl. Nov., 1911.
193. Poultry notes, 1910. By Raymond Pearl. Nov., 1911.
194. Control of the blackleg disease of the potato. By W. J. Morse. Nov., 1911.
195. Insect notes for 1911. By O. A. Johannsen and Edith M. Patch. Dec., 1911.
196. The Mycetophilidae of North America, III. By O. A. Johannsen. Dec., 1911.
197. Finances, meterology, index. Dec., 1911.
198. Orchard spraying experiments. By W. W. Bonns. Mar., 1912.
199. Orchard notes. By W. W. Bonns. Apr., 1912.
200. The Mycetophilidae of North America, IV. By O. A. Johannsen. June, 1912.
201. Spirit of nitrous ether. By H. H. Hanson and A. K. Burke. June, 1912.
202. Aphid pests of Maine, [I]; food plant catalogue of the Aphidae of the world, I; notes on Psyllidae By Edith M. Patch. July, 1912.
203. Elm leaf curl and woolly apple aphid. By Edith M. Patch. Aug., 1912.
204. A case of triplet calves with some general considerations regarding multiple gestation in normally uniparous animals. By Raymond Pearl. Sept., 1912.
205. The mode of inheritance of fecundity in the domestic fowl. By Raymond Pearl. Nov., 1912.
206. The histology of the oviduct of the domestic hen. By F. M. Surface. Nov., 1912.
207. Insect notes for 1912. By O. A. Johannsen. Dec., 1912.
208. Finances, meteorology, index. Dec., 1912.
209. New mineral fertilizer. By C. D. Woods. Jan., 1913.
210. Spruce bud worm and spruce leaf miners. By. O. A. Johannsen. Feb., 1913.
211. Potato flea beetle. By O. A. Johannsen. Mar., 1913.
212. Orchard spraying experiments in 1912. By W. J. Morse and G. A. Yeaton. Mar., 1913.
213. Aphid pests of Maine, II: Willow family; food plant catalogue of the Aphidae of the world, II. By Edith M. Patch. June, 1913.
214. The biology of poultry keeping. By Raymond Pearl. July, 1913.
215. The measurement of the intensity of inbreeding. By Raymond Pearl. Aug. 1913.
216. Poultry notes 1911-1913. By Raymond Pearl. Sept., 1913.
217. Woolly aphid of the apple (*Schizoneura lanigera*). By Edith M. Patch. Oct., 1913.
218. Tables for calculating coefficients of inbreeding. By Raymond Pearl and J. R. Miner. Oct., 1913.
219. Comparative studies of certain disease producing species of Fusarium. By C. E. Lewis. Oct., 1913.
220. Woolly aphids of the elm; food plant catalogue of the Aphidae of the world, III. By Edith M. Patch. Nov., 1913.
221. Constants for normal variation in the fat content of milk. By Raymond Pearl.—A pedigree system for use in breeding guinea pigs and rabbits. By F. M. Surface.—On the ability of chickens to digest small pieces of aluminum. By M. R. Curtis. Dec., 1913.
222. Finances, meteorology, index. Dec., 1913.
223. Spraying experiments and studies on certain apple diseases in 1913. By W. J. Morse. Jan., 1914.
224. Field experiments. Reported by C. D. Woods. Feb., 1914.
225. Currant and gooseberry aphids in Maine; food plant Aphidae of the world, IV. Edith M. Patch. Feb., 1914.
226. Note on the accuracy of bushel weight determination. By C. W. Barber.—Note on the influence of shape and size of plots in tests of varieties of grain. By C. W. Barber.—A table for estimating the probable significance of statistical constants. By Raymond Pearl and J. R. Miner. Mar., 1914.
227. Powdery scab of potatoes. By W. J. Morse. Mar., 1914.
228. Factors influencing the size, shape and physical constitution of the egg of the domestic fowl. By M. R. Curtis. June, 1914.
229. Studies on oat breeding: I, Variety tests, 1910-1913. By F. M. Surface and C. W. Barber. July, 1914.
230. The rhizoctonia disease of potatoes. By W. J. Morse and Michael Shapovalov. Aug., 1914.

231. Improving egg production by breeding. By Raymond Pearl. Sept., 1914. A popular summary of 205.
232. Histological basis of different shank colors in the domestic fowl. By H. R. Barrows. Sept., 1914.
233. Maine aphids of the rose family. By Edith M. Patch. Nov., 1914.
234. [Abstracts of papers published by the station in 1915 but not included in the bulletins]; finances; meteorology; index. Dec., 1914.
235. Studies on oat breeding: II, Selection within pure lines. By F. M. Surface and Raymond Pearl. Jan., 1915.
236. Field experiments in 1914. By C. D. Woods [and others]. Feb., 1915.
237. The assumption of male secondary characters by a cow with cystic degeneration of the ovaries. By Raymond Pearl and F. M. Surface. Mar., 1915.
238. Leafhoppers of Maine. By Herbert Osborn. Apr., 1915.
239. Studies on bean breeding: I, Standard types of yellow eye beans. By Raymond Pearl and F. M. Surface. May, 1915.
240. Apple spraying experiments in 1914. By W. J. Morse and Michael Shapovalov. May, 1915.
241. Woolly aphid of elm and juneberry (*Schizoneura americana* in part, of authors). By Edith M. Patch. Aug., 1915.
242. Pink and green aphid of potato (*Macrosiphum solanifolii* Ashmead). By Edith M. Patch. Oct., 1915.
243. Further data on the measurement of inbreeding. By Raymond Pearl. Nov., 1915.
244. Blueberry insects in Maine. By W. C. Woods. Dec., 1915.
245. Abstracts of papers not included in bulletins: finances; meterology; index. Dec., 1915.
246. Field experiments in 1915. Reported by C. D. Woods. Jan., 1916.
247. Report of the first Jersey sires' futurity test of the Aroostook Jersey Breeders' Association. By Raymond Pearl. Feb., 1916.
248. Studies of life histories of leafhoppers of Maine. By Herbert Osborn. Mar., 1916.
249. Six years of experimental apple spraying at Highmoor farm. By W. J. Morse. Mar., 1916.
250. Studies on oat breeding: IV, Pure line varieties. By F. M. Surface and Jacob Zinn. May, 1916.
251. Soluble poisons in the poisoned bait spray to control the adult of the apple maggot (*Rhagoletis pomonella* Walsh). By H. H. P. Severin. Apr., 1916.
252. Spraying experiments and apple diseases in 1915. By W. J. Morse. May, 1916.
253. Syrphidae of Maine. By C. L. Metcalf. July, 1916.
254. Studies of life histories of froghoppers of Maine. By Herbert Osborn. Sept., 1916.
255. Dwarf eggs of the domestic fowl. By Raymond Pearl and M. R. Curtis. Oct., 1916.
256. Elm leaf rosette and woolly aphid of the apple, *Schizoneura lanigera* (*americana* in part). By Edith M. Patch. Nov., 1916.
257. Abstracts of papers not included in bulletins: finances; meteorology; index. Dec., 1916.
258. Some commonly neglected factors underlying the stock breeding industry. By Raymond Pearl. Jan., 1917.
259. Pupae of some Maine species of Notodontoidea. By Edna Mosher. Feb., 1917.
260. Barn and field experiments in 1916. Reported by C. D. Woods. Mar., 1917.
261. Report of progress on animal husbandry investigations in 1916. By Raymond Pearl. June, 1917.
262. The change of milk flow with age, as determined from seven day records of Jersey cows. By Raymond Pearl and S. W. Patterson. July, 1917.
263. Syrphidae of Maine, second report: Life history studies. By C. L. Metcalf. Aug., 1917.
264. Life history, habits, natural enemies and methods of control of the currant fruit fly (*Epochra canadensis* Loew). By H. H. P. Severin. Sept., 1917.
265. The biology of the alder flea beetle (*Altica bimarginata* Say). By W. C. Woods. Oct., 1917.
266. The chemical composition of green sprouted oats; fish wastes for feeding animals. By J. M. Bartlett. Nov., 1917.
267. The aphid of choke cherry and grain (*Aphis pseudoavenae* sp. n.). By Edith M. Patch. Nov., 1917.
268. Abstracts of papers not included in bulletins; finances; meteorology; index. Dec., 1917.
269. Barn and field experiments in 1917. Reported by C. D. Woods. Feb., 1918.
270. Eastern aphids: A few species of Procipihlus; food plant catalogue of the Aphidae of the world, V. By Edith M. Patch. Apr., 1918.
271. Apple spraying experiments in 1916 and 1917. By W. J. Morse. May, 1918.
272. Inheritance studies of certain color and horn characteristics in first generation crosses of dairy and beef breeds. By J. W. Gowen. Aug., 1918.
273. The biology of Maine species of Altica. By W. C. Woods. Oct., 1918.
274. Results of progress on animal husbandry investigations in 1917. By J. W. Gowen. Dec., 1918.
275. Abstracts of papers not included in bulletins; finances; meteorology; index. Dec., 1918.
276. The meadow plant bug [*Miris dolabratus*]. By Herbert Osborn. Mar., 1919.
277. Potato studies. By C. D. Woods. Feb., 1919.
278. Soil test experiment at Aroostook farm. Second report. By C. D. Woods. Mar., 1919.
279. The variation of Ayrshire cows in the quantity and fat content of their milk. By Raymond Pearl and J. R. Minor. Apr., 1919.
280. Appliances and methods for pedigree poultry breeding at the Maine station. By J. W. Gowen. June 1919. Largely a reprint and compilation of 159-165.
281. Studies in milk secretion: VII, Transmitting qualities of Jersey sires for milk yield, butter-fat percentage, and butter-fat. By Raymond Pearl, J. W. Gowen, and J. R. Rice. Oct., 1919.
282. Three pink and green aphids of the rose; food plant catalog of the Aphididae of the world, VI. By Edith M. Patch. Dec., 1919.
283. Report of progress on animal husbandry investigations in 1919. By J. W. Gowen. Dec., 1919.
284. Abstract of papers not included in bulletins; finances; meteorology; index. Dec., 1919.
285. Wheat investigations: I, Purelines. By Jacob Zinn. Mar., 1920.
286. The variation of milk secretion with age in Jersey cattle. By J. W. Gowen. May, 1920.
287. Self sterility and cross sterility in the apple. By J. W. Gowen. May, 1920.
288. Some observations upon the effect of borax in fertilizers. By W. J. Morse. June, 1920.
289. The correlation between milk yield of one lactation and that of succeeding lactations. By J. W. Gowen. June, 1920.
290. The variation of butter-fat percentage with age in Jersey cattle. By J. W. Gowen. Aug., 1920.
291. The correlation between the butter-fat percentage of one lactation and the butter-fat percentage of succeeding lactations in Jersey cattle. By J. W. Gowen. Aug., 1920.
292. Potato mosaic. By Donald Folsom. Aug., 1920.
293. Studies in milk secretion: VIII, On the influence of age on the milk yield and butter-fat percentage, as determined from the 365 day records of Holstein-Friesian cattle. By J. W. Gowen. Oct., 1920.
294. Normal and abnormal germination of grass fruits. By Jacob Zinn. Dec., 1920.
295. Abstracts of papers not included in bulletins; finances; meteorology; index. Dec., 1920.

INDEXES.

In addition to the index for each annual report, which includes also the bulletins of the year, collective indexes have been published as follows:

Agricultural bibliography of Maine. . . also an index to the volumes of Agriculture of Maine from 1850 to 1892. By B. W. McKeen. 1893. (A separately paged report included in Ann. Rpt. of Me. Bd. Agr. 35, 1892.)

NOTE.—The volumes indexed contain some accounts of early experimental work and, with a few exceptions, reports and bulletins of the agricultural experiment station up to and including 1892.

Index to reports for the years 1885–1896 [and Bulletins, second series, 6–31 [11]], inclusive. (*In* Ann. Rpt. Me. Agr. Expt. Sta. 12 (1896), p. 191–227.)

Index to Reports for the years 1897 to 1900 [and Bulletins, second series, 32–69[11]], inclusive. (*In* Ann. Rpt. Me. Agr. Expt. Sta. 16 (1900) (or Bulletin 69), p. 209–228.)

Index to reports for the years 1901 to 1905 and to bulletins 70 to 124, inclusive. (*In* Ann. Rpt. Me. Agr. Expt. Sta. 21 (1905) (or Bulletin 124), p. 243–268.)

Index to reports for the years 1906 to 1910 and to Bulletins 125 to 186, inclusive. (*In* Ann. Rpt. Me. Agr. Expt. Sta. 26 (1910) (or Bulletin 186), p. 404–435.)

Index to reports for the years 1911 to 1915 and to Bulletins 235 [i. e., 187] to 245, inclusive. (*In* Ann. Rpt. Me. Agr. Expt. Sta. 31 (1915) (or Bulletin 245), p. 326–334.)

Index to reports for the years 1916 to 1920 and to Bulletins 246 to 295, inclusive. (*In* Ann. Rpt. Me. Agr. Expt. Sta. 36 (1920) (or Bulletin 295), p. 231–236.)

MARYLAND.

Maryland Agricultural Experiment Station, College Park.

BULLETINS.

1. History, organization, and work of the station. By H. E. Alvord. June, 1888.
2. Cutting seed potatoes for planting. By H. E. Alvord.—[Details of the potato experiment. By W. H. Bishop.]—Appendix with information about the station. Sept., 1888.
3. Fodder corn and fodder cane; appendix about taking and sending samples. By H. E. Alvord. Dec., 1888.
4. Experiment orchard. By W. H. Bishop. Mar., 1889.
5. Horticultural department and field experiments. By H. E. Alvord. June, 1889.
6. Commercial fertilizers. By H. E. Alvord and H. J. Patterson. Sept., 1889.
7. Farm manures. By H. E. Alvord. Dec., 1889. Merely a statement that the material prepared for this bulletin was destroyed by fire.
8. Some feeding trials: I, Feeding old milch cows for beef. By A. I. Hayward.—II, Feeding heifers on ensilage only. By H. E. Alvord.—III, Working oxen fed for beef. By H. E. Alvord. Mar., 1890.
9. Comparison of strawberries. By W. H. Bishop. June, 1890.
10. Wheat: Fertilizer experiments and variety tests. By A. I. Hayward. Sept., 1890.
11. Experiments with tomatoes. By W. H. Bishop and H. J. Patterson. Dec., 1890. See 113.
12. Pig feeding. By H. E. Alvord and A. I. Hayward. Mar., 1891.
13. Strawberry experiments. By J. S. Robinson. June, 1891.
14. Wheat: Variety tests and fertilizer experiments, 1891. By A. I. Hayward. Sept., 1891.
15. The experiment vineyard. [By T. L. Brunk.] Dec., 1891.
16. Wheat insects. By E. W. Doran. Mar., 1892.
17. Experiments with strawberries. By J. S. Robinson.—Seed potatoes: Comparison of northern and home-grown seed. By E. H. Brinkley. June, 1892.
18. Fertilizer tests with sweet potatoes. By E. H. Brinkley. Oct., 1892.
19. Experiments with tomatoes. By J. S. Robinson. Dec., 1892.
20. The composition and digestibility of the different parts of corn fodder. (Stover): Feeding experiments conducted 1891–92. By H. J. Patterson. Mar., 1893.
21. The soils of Maryland. By Milton Whitney. June, 1893.
22. Steer feeding: A well-balanced versus a poorly balanced ration. By R. H. Miller. Sept., 1893.
23. Injurious insects of Maryland. By C. V. Riley. Dec., 1893.
24. Composition of commercial fertilizers sold in this State. By H. B. McDonnell. Feb., 1894.
25. Agricultural and horticultural departments: Corn, potatoes. By R. H. Miller and E. H. Brinkley.—Tomatoes, strawberries, grapes, etc. By J. S. Robinson. Mar., 1894. See 113.
26. Tobacco experiments. By H. J. Patterson. June, 1894.
27. Composition of commercial fertilizers sold in this State. By H. B. McDonnell [and others]. Aug., 1894.
28. Experiments with wheat and barley for the years 1893 and 1894. By R. H. Miller and E. H. Brinkley. Sept., 1894.
29. Further investigations on the soils of Maryland. By Milton Whitney and Sothoron Key. Dec., 1894.
30. Composition of commercial fertilizers sold in this State: the fertilizer law. By H. B. McDonnell [and others]. Jan., 1895. Appendix. Tables for calculating fertilizer analyses and valuation. Dec., 1894.
31. Potato experiments. By R. H. Miller and E. H. Brinkley. Mar., 1895.
32. The San José scale. By C. V. Riley. Apr., 1895.
33. Horticultural and Agricultural departments: Small fruits, vegetables. By J. S. Robinson.—Field corn. By R. H. Miller and E. H. Brinkley. Apr., 1895.
34. Composition of commerical fertilizers sold in this State. By H. B. McDonnell [and others]. July, 1895.
35. Wheat, barley, oats, and hay experiments for the year 1895. By R. H. Miller and E. H. Brinkley. Sept., 1895.
36. Steer feeding: A well-balanced versus a poorly balanced ration. By R. H. Miller and E. H. Brinkley. Dec., 1895.
37. Composition of commercial fertilizers sold in this State. By H. B. McDonnell [and others]. Special issue. Feb., 1896.
38. Potato experiments. By R. H. Miller and E. H. Brinkley. 1896.
39. Spray calendar. By E. G. Lodeman. Apr., 1896. A folded sheet 9 by 24 in., printed on one side.
40. Composition of commercial fertilizers sold in this State. By H. B. McDonnell [and others]. Special issue. Aug., 1896.
41. Test of methods of preparing and feeding corn fodder. By H. J. Patterson. Sept., 1896.
42. The Maryland trees and nursery-stock law and other information of special interest to nurserymen and fruit growers. By W. G. Johnson. Special issue. Oct., 1896.

[11] Usually excepting bulletins on inspection work.

43. Report upon the value of a new corn product. By H. J. Patterson. Dec., 1896.
44. The soils of the Hagerstown valley. By C. W. Dorsey. Dec., 1896.
45. Composition of commercial fertilizers sold in this State. By H. B. McDonnell [and others]. Special issue. Feb., 1897.
46. Corn and potato experiments. By R. H. Miller and E. H. Brinkley. Mar., 1897.
47. Dairy farming. By H. J. Patterson. June, 1897.
48. Some common injurious plant lice, with suggestions for their destruction. By W. G. Johnson. June, 1897.
49. Composition of commercial fertilizers sold in this State. By H. B. McDonnell [and others]. Special issue. Aug., 1897.
50. Rust and leopard spot: Two dangerous diseases of asparagus. By W. G. Johnson. Sept., 1897.
51. Horse feeding: Tests of the digestibility of oats, corn, hay, and the new corn product. By H. J. Patterson. Dec., 1897.
52. Composition of commercial fertilizers sold in this State. By H. B. McDonnell [and others]. Special issue. Feb., 1898.
53. Special investigation of the so-called "new" horse disease in Maryland. By S. S. Buckley. Mar., 1898.
54. Tomato Experiments 1896 and 1897. By J. S. Robinson. Mar., 1898. See 113.
55. The black peach aphis (*Aphis prunicola* Kalt.); cutworms in young tobacco; law providing for the suppression and control of insect pests and plant diseases in Maryland. By W. G. Johnson. May, 1898.
56. Wheat, winter oats, barley, and lime experiments for the years 1896 and 1897. By R. H. Miller and E. H. Brinkley. June, 1898.
57. Report on the San José scale in Maryland and remedies for its suppression and control. By W. G. Johnson. Aug., 1898.
58. The Hessian fly in Maryland. By W. G. Johnson.—Some important wheat diseases. By C. O. Townsend. Aug., 1898.
59. Sweet potato insects. By E. D. Sanderson. Jan., 1899.
60. Some diseases of the sweet potato and how to treat them. By C. O. Townsend. Mar., 1899.
61. The sugar beet in Maryland. By H. W. Wiley. June, 1899.
62. Experiments with wheat, corn, and potatoes. By H. J. Patterson [and others]. June, 1899.
63. Experiments with feeding pigs. By H. J. Patterson. Dec., 1899.
64. A study of the cause of mottled butter. By C. F. Doane. Jan., 1900.
65. Insecticides, fungicides, and spraying apparatus. By W. G. Johnson, C. O. Townsend, and H. P. Gould. Mar., 1900.
66. Lime: Sources and relation to agriculture. By H. J. Patterson. May, 1900.
67. The culture and handling of tobacco in Maryland. By H. J. Patterson. June, 1900.
68. Fertilizer experiments with different sources of phosphoric acid. By H. J. Patterson. Sept., 1900.
69. The influence of feed and care on the individuality of cows. By C. F. Doane. Oct., 1900.
70. The chemical composition of Maryland soils. By F. P. Veitch. Jan., 1901.
71. Notes on spraying peaches and plums in 1900. By C. O. Townsend and H. P. Gould. Feb., 1901.
72. Peach growing in Maryland. By H. P. Gould. Mar., 1901.
73. Suggestions about combating the San José scale. By H. P. Gould. Apr., 1901.
74. Notes on celery blight. By C. O. Townsend. May, 1901.
75. The effect of hydrocyanic-acid gas upon grains and other seeds. By C. O. Townsend. June, 1901.
76. Parturient paresis—milk fever, calving fever. By S. S. Buckley. June, 1901.
77. The comparative digestibility of raw, pasteurized, and cooked milk. By C. F. Doane and T. M. Price. Aug., 1901.
78. The dehorning of stock. By C. F. Doane. Dec., 1901.
79. The disinfecting properties of washing powders. By C. F. Doane. Jan., 1902.
80. Acute epizoötic leucoencephalitis in horses. By W. G. McCallum and S. S. Buckley. Feb., 1902.
81. Soils and fertilizers for greenhouse crops. By H. J. Patterson and T. H. White. Feb., 1902.
82. Thinning fruits. By E. P. Sandsten. May, 1902.
83. Investigations as to the cause of pithiness in celery. By E. P. Sandsten and T. H. White. May, 1902.
84. Some feeding experiments with cows, and tables for the computation of rations for farm animals. By H. J. Patterson. June, 1902.
85. Alfalfa for Maryland. By W. T. Taliaferro. Aug., 1902.
86. The influence of preservatives upon the food value of milk. By C. F. Doane and T. M. Price. Sept., 1902.
87. The periodical cicada and its occurrence in Maryland in 1902. By A. L. Quaintance. Nov., 1902.
88. Economical methods for improving the keeping qualities of milk. By C. F. Doane. May, 1903.
89. Experiments with potash as a fertilizer. By H. J. Patterson. June, 1903.
90. Experiments on the control of San José scale. By T. B. Symons. Dec., 1903.
91. Experiments with nitrogenous fertilizers. by H. J. Patterson. Feb., 1904.
92. Notes on apple culture. By C. F. Austin. Mar., 1904.
93. Second report on the cause of pithiness in celery. By C. F. Austin and T. H. White. May, 1904.
94. Systems for keeping milk and butter records. By C. F. Doane. July, 1904.
95. The character of milk during the period of heat. By C. F. Doane. Aug., 1904.
96. Sweet corn: Breeding, growing, and curing for seed. By Augustus Stabler and [H. J. Patterson]. Sept., 1904.
97. The relative profits of selling milk, cream, and butter. By C. F. Doane. Oct., 1904.
98. Home-grown protein as a substitute for purchased feeds and tests of soiling crops. By C. F. Doane. Nov., 1904.
99. Test of different spraying materials for the control of San José scale. By T. B. Symons. Dec., 1904.
100. The wild legumes of Maryland and their utilization. By J. B. S. Norton and E. P. Walls. Mar., 1905.
101. The common injurious and beneficial insects of Maryland. By T. B. Symons. Apr., 1905.
102. Leucocytes in milk and their significance. By C. F. Doane. May, 1905.
103. Methods of tobacco seed selections. By W. W. Cobey. June, 1905.
104. Tests of materials for bedding cows. By C. F. Doane. July, 1905.
105. Experiments with fumigating nursery stock. By T. B. Symons and A. B. Gahan. Aug., 1905.
106. The influence of the size of the grain and the germ of corn upon the plant. By E. P. Walls. Sept., 1905,
107. 1905—spraying experiments for San José scale. By T. B. Symons and A. B. Gahan. Oct., 1905.
108. Irish potato diseases. By J. B. S. Norton. Apr., 1906.
109. Mosquitoes. By T. B. Symons, T. H. Coffin, and A. B. Gahan. May, 1906.
110. Results of experiments on the liming of soils. By H. J. Patterson. Sept., 1906.
111. The oyster shell scale. By T. B. Symons. Oct., 1906.
112. Treating San José scale: Results of experiments conducted in 1906. By T. B. Symons and A. B. Gahan. Nov., 1906.
113. Tomatoes: Testing varieties, culture, training and spraying. By T. H. White and W. R. Ballard. Dec., 1906. Summarizes, with subsequent data, information contained in Buls. 11, 25 and 54.

114. Fertilizer experiments with different sources of phosphoric acid. By H. J. Patterson. Jan., 1907.
115. Control of insect pests and diseases of Maryland crops. By J. B. S. Norton and T. B. Symons. Feb., 1907.
116. Marketing fruit and truck crops. By W. N. Hutt. Mar., 1907.
117. The digestibility of molasses feeds. By H. J. Patterson and Raymond Outwater. Apr., 1907.
118. Alfalfa in Maryland. By C. W. Nash. June, 1907.
119. Greenhouse pests of Maryland. By A. B. Gahan. July, 1907.
120. Sweet corn investigations. By M. N. Straughn. Aug., 1907.
121. The beef cattle industry in Maryland. By B. E. Porter. Sept., 1907.
122. Stable manure experiments. By W. T. L. Taliaferro and H. J. Patterson. Oct., 1907.
123. Spraying for San José scale. By T. B. Symons and G. P. Weldon.—The peach lecanium or terrapin scale (*Eulecanium nigro-fasciatum* Perg.). By A. B. Gahan. Nov., 1907.
124. Strawberries. By C. P. Close, W. R. Ballard, and T. H. White. Dec., 1907.
125. Nut growing in Maryland. By C. P. Close. Feb., 1908.
126. Manuring and fertilizing truck crops. By C. P. Close and T. H. White. Apr., 1908.
127. Miscellaneous greenhouse notes. By C. P. Close, T. H. White, and W. R. Ballard. May, 1908.
128. The effect of animal digestion and fermentation of manures on the vitality of seeds. By E. I. Oswald. June, 1908.
129. Silos and silage in Maryland. By H. L. Crisp and H. J. Patterson. July, 1908.
130. Nurseries and nursery inspection. By T. B. Symons, J. B. S. Norton, and C. P. Close. Aug., 1908.
131. Miscellaneous treatment for San José scale. By T. B. Symons. Nov., 1908.
132. Irish potato investigations. By C. P. Close and T. H. White. Feb., 1909.
133. Cabbage experiments and culture. By C. P. Close and T. H. White. May, 1909.
134. Brown-tail moth, house fly and mosquito. By T. B. Symons. Apr., 1909.
135. Butter making in Maryland. By C. W. Melick. May, 1909.
136. Whipped cream. By C. W. Melick. June, 1909.
137. The Angoumois grain-moth. By T. B. Symons. July, 1909.
138. The poultry industry in Maryland. By C. L. Opperman. Aug., 1909.
139. Nodular tæniasis or tapeworm disease of fowls. By G. E. Gage and C. L. Opperman. Oct., 1909.
140. The San José scale and the osage orange hedge. By T. B. Symons and L. M. Peairs. Nov., 1909.
141. Corn: Variety tests, seed breeding, selection and testing. By C. W. Nash. Jan., 1910.
142. The codling moth (*Carpocapsa pomonella*). By T. B. Symons and L. M. Peairs. Feb., 1910.
143. Controlling fungous diseases. By J. B. S. Norton and A. J. Norman. Feb., 1910.
144. Apple culture. By C. P. Close. Mar., 1910. See 178.
145. Tuberculosis of animals. By S. S. Buckley. June, 1910.
146. Poultry house construction and its influence on the domestic fowl, Pt. I. By C. L. Opperman. July, 1910.
147. Wheat: Variety tests and diseases. By Nickolas Schmitz. Aug., 1910.
148. Spraying, fumigating, and dipping for the control of San José scale. By T. B. Symons, L. M. Peairs, and E. N. Cory. Nov., 1910.
149. The terrapin scale. By T. B. Symons and E. N. Cory. Dec., 1910.
150. Pig feeding experiments and two kinds of hoghouses. By A. L. Stabler. Jan., 1911.
151. Fertilizers on asparagus. By C. P. Close, T. H. White, and W. R. Ballard. Feb., 1911.
152. Aphidiinæ of North America. By A. B. Gahan. Apr., 1911.
153. A study showing bacteria and animal organisms determined in the feces and intestinal mucosa of healthy chickens. By G. E. Gage. May, 1911.
154. Bee keeping in Maryland: I, The status of bee keeping in the State. By T. B. Symons.—II, The management of bees. By A. H. McCray. June, 1911.
155. Maryland weeds and other harmful plants. By J. B. S. Norton. Aug., 1911.
156. Rose mildew. By J. B. S. Norton and T. H. White. Sept., 1911.
157. Some experiments with poultry: Increasing the egg production. By C. L. Opperman.—The time required for eggs to become fertile after a male has been added to the breeding pen. By R. H. Waite.—The persistence of fertility after the male has been removed from the breeding pen. By R. H. Waite. Sept., 1911.
158. Miscellaneous greenhouse experiments. By C. P. Close and T. H. White. Sept., 1911.
159. Peach culture. By C. P. Close and W. R. Ballard. Oct., 1911.
160. Strawberries. By C. P. Close, W. R. Ballard, and T. H. White. Oct., 1911.
161. Treatment for the San José scale and terrapin scale insects. By T. B. Symons, E. N. Cory, and O. G. Babcock. Nov., 1911.
162. The quality of seed: Results of seed analyses. By J. B. S. Norton. Dec., 1911.
163. Increasing the durability of fence posts. By F. W. Besley. Jan., 1912.
164. Lime-sulfur as a summer spray. By J. B. S. Norton and T. B. Symons. Feb., 1912.
165. Boys' corn-growing contest in 1911: Suggestions for corn growing and conducting a contest. By Nickolas Schmitz and W. E. Hanger. Feb., 1912.
166. How lime is distributed through and lost from soils: Factors influencing the diffusion and depletion of lime in soils. By L. B. Broughton. May, 1912.
167. Changes in potatoes during storage. By C. O. Appleman. May, 1912.
168. By-product feeds. By H. J. Patterson and H. J. White. July, 1912.
169. Cow-testing associations. By G. H. Hibbard and G. E. Wolcott. Aug., 1912.
170. The Maryland seed law. By C. P. Smith. Oct., 1912.
171. Poultry notes. By R. H. Waite. Dec., 1912.
172. Irish potato investigations from 1909 to 1913. By T. H. White. Jan., 1913.
173. Tomato variations induced by culture. By T. H. White. Jan., 1913.
174. Hog cholera. By B. M. Bolton. Feb., 1913.
175. Miscellaneous insect pests. By T. B. Symons and E. N. Cory. Mar., 1913.
176. The peach-tree borer (*Sanninoidea exitiosa* Say). By E. N. Cory. Apr., 1913.
177. Open stables versus closed stables for dairy animals. By S. S. Buckley.—The bacterial content of milk produced in the open stable and in the closed stable. By R. W. Lamson. May, 1913.
178. Apple orchard experiments. By W. R. Ballard [and C. P. Close]. Oct., 1913. A revision of 144.
179. The quality of clover and vetch seed found in Maryland markets in 1913. By C. P. Smith. Mar., 1914.
180. Tomatoes: Varieties, diseases, culture. By T. H. White, J. B. S. Norton, and J. F. Monroe. Mar. 1914.
181. Inexpensive aids in producing sanitary milk. By R. W. Lamson. Mar., 1914.
182. Small fruits. By W. R. Ballard. Apr., 1914.
183. Biochemical and physiological study of the rest period in the tubers of *Solanum tuberosum*. By C. O. Appleman. May, 1914.
184. The physical character of the curd of milk from different breeds; curd as an index of the food value of milk; studies of the proteid content of milk. By S. S. Buckley. June, 1914.

185. The Maryland hog: Statistics, housing, feeding, care and management, miscellaneous information. By C. L. Opperman.—Breeds and breeding. By R. H. Ruffner.—Diseases of swine. By S. S. Buckley. Aug., 1914.
186. Land drainage in Maryland. By J. R. Haswell. Oct., 1914.
187. Profitable and unprofitable cows: Cow testing associations in Maryland. By G. S. Wolcott. Nov., 1914.
188. Types and varieties of Maryland tobacco. By W. W. Garner and D. E. Brown. Dec., 1914.
189. The quality of grass and rape seed found in Maryland markets in 1913. By C. P. Smith. Jan., 1915.
190. Tests of varieties of corn. By W. E. Hanger. Feb., 1915.
191. Relation of catalase and oxidases to respiration in plants. By C. O. Appleman. Sept., 1915.
192. Internal action of chemicals on resistance of tomatoes to leaf disesases. By J. B. S. Norton. Jan., 1916.
193. Tests of the availability of different grades of ground limestone. By L. B. Broughton, R. C. Williams and G. S. Frazer. Feb., 1916.
194. Sudan grass. By Nickolas Schmitz. Feb., 1916.
195. Onions: Experiments and culture. By T. H. White. Mar., 1916.
196. Methods and problems in pear and apple breeding. By W. R. Ballard. Apr., 1916.
197. Clover and grass seed inspected in 1914. By C. P. Smith. July, 1916.
198. Wheat. By Nickolas Schmitz. Oct., 1916.
199. Tests of the value of stable manure, commercial fertilizer, and crimson clover for vegetable crops. By T. H. White. Dec., 1916.
200. Winter oats, barley, spelt and emmer. By Nickolas Schmitz. Jan., 1917.
201. Soy beans. By Nickolas Schmitz. Feb., 1917.
202. Timothy fertilization and culture. By Nickolas Schmitz. Feb., 1917.
203. Agricultural seed inspected in 1915. By C. P. Smith. Mar., 1917.
204. Variety tests of potatoes, tomatoes, cabbage and other vegetables. By T. H. White. Mar., 1917.
205. Fumigation of greenhouses. By E. N. Cory. Apr., 1917.
206. The hothouse milliped. By E. N. Cory and F. H. O'Neill. Apr., 1917.
207. Plum growing in Maryland. By F. S. Holmes. May, 1917.
208. *Tarsonemus pallidus* Banks, a pest of geraniums. By Philip Garman. June, 1917.
209. The oriental peach pest (*Laspeyresia molesta* Busck), a dangerous new fruit insect of Maryland. By Philip Garman. Dec., 1917.
210. Agricultural seed inspected in 1916. By C. P. Smith. Jan., 1918.
211. Strawberry notes. By W. R. Ballard. Jan., 1918.
212. Physiological basis for the preparation of potatoes for seed. By C. O. Appleman. Feb., 1918.
213. The control of house flies by the maggot trap. By E. N. Cory. Feb., 1918.
214. Tests of an "all crops soil" inoculum. By Paul Emerson. Mar., 1918.
215. Fertilizing and cultural experiments with Irish potatoes. By T. H. White. Mar., 1918.
216. Conditions detrimental to seed production. By J. B. S. Norton and C. E. Leathers. June, 1918.
217. The relation of milk yield to age at first calf. By R. C. Towles. June, 1918.
218. Report of nut tree investigations in Maryland. By E. S. Johnston. June, 1918.
219. The revised agricultural seed law. By C. P. Smith. Aug., 1918.
220. Agricultural seed inspected in 1917. By C. P. Smith. Sept., 1918.
221. An accurate method of determining which hens are laying. By R. H. Waite. Sept., 1918.
222. Experiments with fertilizers on greenhouse crops; the pollination of greenhouse tomatoes. By T. H. White. Sept., 1918.
223. A comparison of several species of Lepidoptera infesting peach and apple in Maryland, with additional notes on the oriental peach moth. By Philip Garman. Oct., 1918.
224. Agricultural seed inspected in March and April, 1918. By C. P. Smith. Dec., 1918.
225. Fertilizer experiments with tobacco. By W. W. Garner and D. E. Brown. Jan., 1919.
226. How to caponize. By R. H. Waite. Feb., 1919.
227. Citrus fruit rinds as a hog feed. By R. S. Allen. Mar., 1919.
228. Growing alfalfa in Maryland. By Nickolas Schmitz. July, 1919.
229. Agricultural seed inspected in the fall of 1918. By C. P. Smith. July, 1919.
230. Poultry appliances and methods. By R. H. Waite. Aug., 1919.
231. Field damaged wheat for poultry. By R. H. Waite. Sept., 1919.
232. Mushrooms. By T. H. White. Sept., 1919.
233. The effect of age of eggs on their hatching quality. By R. H. Waite. Dec., 1919.
234. Earthworms, the important factor in the transmission of gapes in chickens. By R. H. Waite. Jan., 1920.
235. Capons vs. cockerels. A comparison of their rate of growth and feed consumption. By R. H. Waite. Mar., 1920.
236. The control of the strawberry leaf beetle (*Typophorus canellus* Fabr.). By E. N. Cory and W. C. Travers. May, 1920.
237. Variety tests of corn, wheat, and soy beans. By J. E. Metzger and Geary Eppley. July, 1920.
238. Seed inspection for 1919. By F. S. Holmes. July, 1920.
239. The relation of certain greenhouse pests to the transmission of a geranium leaf spot. By Philip Garman. Oct., 1920.
240. Internal fungous parasites of agricultural seeds. By C. C. Chen. Nov., 1920.
241. Annotated list of Halticini. By A. B. Duckett. Dec., 1920.

SPECIAL BULLETINS.

[A.] Facts about the station. Fair edition, 1889.
[B.] Potash and paying crops. [Compiled by A. de Ghequier]. July, 1890. Identical with Georgia Sta. Bul. 9, West Virginia Sta. Special Bul. [1], Tennessee Sta. Special Bul. D.
[C.] Composition of commercial fertilizers sold in this State. Oct., 1890.
D. Composition of commercial fertilizers sold in this State. Feb., 1891.
E. Composition of commercial fertilizers sold in this State. By H. E. Alvord. Aug., 1891.
F. The agricultural outlook for Maryland. By Edward Stake. Jan., 1892.
G. Composition of commercial fertilizers sold in this State. Feb., 1892.
H. Government direction of agriculture in Europe. By J. E. Ray, jr. July, 1892.
I. Composition of commercial fertilizers sold in this State. Aug., 1892.
J. Composition of commercial fertilizers sold in this State. By H. B. McDonnell. Feb., 1893
K. Composition of commercial fertilizers sold in this State. By H. B. McDonnell. June, 1893.

MASSACHUSETTS.

Massachusetts (State) Agricultural Experiment Station, Amherst, 1883–1895.

In 1895 the Massachusetts (State) Agricultural Experiment Station and the Hatch Experiment Station of the Massachusetts Agricultural College were consolidated under the name of the latter. In 1907 this name was changed to Massachusetts Agricultural Experiment Station.

BULLETINS.

1. [Brief account of organization]; Fodder and analyses. By C. A. Goessmann. July, 1883.
2. Fertilizer analyses. By C. A. Goessmann. Aug., 1883.
3. Fodder analyses; fertilizer analyses. By C. A. Goessmann. Sept., 1883.
4. Fodder analyses; fertilizer analyses. By C. A. Goessmann Oct., 1883.
5. Fodder analyses; fertilizer analyses. By C. A. Goessmann. Nov., 1883.
6. Fodder analyses; fertilizer analyses. By C. A. Goessmann. Dec., 1883.
7. Observations in regard to insects injurious to the apple. By S. T. Maynard.—Experiments with special fertilizers in fruit culture; garden crops; fertilizer analyses. By C. A. Goessmann. Mar., 1884.
8. Fodder and fodder analyses; valuation of fertilizers and analyses of fertilizers. By C. A. Goessmann. Apr., 1884.
9. Notes upon insects injurious to farm and garden crops. By S. T. Maynard.—Fodder and fodder analyses; fertilizer analyses. By C. A. Goessman. May, 1884.
10. Observations regarding the vitality of the seed of various weeds and the causes of certain diseases of grasses. By S. T. Maynard.—Notes on feeding experiments with corn ensilage; fodder and fodder analyses. By C. A. Goessmann. June, 1884.
11. Notes on feeding experiments with corn ensilage, continued; fertilizer analyses; fodder and fodder analyses. By C. A. Goessmann. Sept., 1884.
12. Notes on feeding experiments with gluten meal as a constituent of the daily diet of milch cows; fodder and fodder analyses. By C. A. Goessmann. Oct., 1884.
13. Notes on feeding experiments with pigs; fertilizer analyses. By C. A. Goessmann. Nov., 1884.
14. [Meteorological summary, Dec., 1884–Feb., 1885].—Fodder and fodder analyses; valuation of fertilizers and analyses of fertilizers. By C. A. Goessmann. Mar., 1885.
15. Meterological summary for two months ending Apr., 30.—Notes on feeding experiments with milch cows; analyses of fodder articles; fertilizer analyses. By C. A. Goessmann. Apr., 1885.
16. Meterological summary for two months ending June 30.—Fodder analyses; analyses of garden crops; fertilizer analyses. By C. A. Goessmann. July, 1885.
17. Meteorological summary for month ending July 31.—Fodder analyses; analyses of fruits; analyses of weeds; fertilizer analyses. By C. A. Goessmann. Aug., 1885.
18. Meteorological summary for two months ending Sept. 30.—Notes on feeding experiments with pigs; fodder analyses; fertilizer analyses. By C. A. Goessmann. Oct., 1885.
19. Meteorological summary for three months ending Mar. 31.—Valuation of fertilizers and analyses of fertilizers; analyses of articles of feed with reference to fertilizing constituents. By C. A. Goessmann. Apr., 1886.
20. Meteorological summary for two months ending May 31.—Fodder and fodder analyses; fertilizers and fertilizer analyses; fertilizing constituents of feed. By C. A. Goessmann. May, 1886.
21. Meteorological summary for the month ending June 30.—Fodder; fertilizers. By C. A. Goessmann. June, 1886.
22. Meteorological summary for the four months ending Oct. 31.—Feeding experiment with milch cows; fodder and fodder analyses. By C. A. Goessmann. Oct., 1886.
23. Meteorological summary for the four months ending Feb. 28.—Trade values of fertilizing ingredients in raw materials and chemicals; fodder and fodder materials. By C. A. Goessmann. Mar., 1887.
24. Meteorological summary for the month ending Mar. 31.—Suggestions upon planting trees and small fruits. By S. T. Maynard.—[Fertilizer analyses]; fodder and fodder analyses. By C. A. Goessmann. Apr., 1887.
25. Meteorological summary for the three months ending June 30.—Notes on feeding experiments with pigs. By C. A. Goessmann. July, 1887.
26. Meteorological summary for the month ending July 31.—Food and fodder analyses; fertilizer and fertilizer analyses. By C. A. Goessmann. Aug., 1887.
27. Meteorological summary for August and September.—Notes on feeding experiments with milch cows. By C. A. Goessmann. Oct., 1887.
28. Meteorological summary for the five months ending Feb. 29.—Trade values of fertilizing ingredients in raw materials and chemicals; analyses of fertilizers; fodder analyses. By C. A. Goessmann. Mar., 1888.
29. Meteorological summary for three months ending May 31.—Fodder analyses. By C. A. Goessmann. June, 1888.
30. Meteorological summary for two months ending July 31.—Notes on feeding experiments with pigs (eighth experiment). By C. A. Goessmann. Aug, 1888. First to seventh feeding experiments published in Fifth annual report for 1887, p. 55–83.
31. Meteorological summary for two months ending Sept. 30.—On commercial fertilizers [etc.] By C. A. Goessmann. Oct., 1888.
32. Meteorological summary for four months ending Jan. 31.—Record of twelve cows which served at the station for experiments to ascertain the cost of feed for the production of milk; analyses of fodder articles. By C. A. Goessman. Feb., 1889.
33. On commercial fertilizer. By C. A. Goessmann. Mar. 1889.
34. Meteorological summary for the four months ending May 31.—Outlines of the work . . . during the present season: Department of vegetable physiology. By J. E. Humphrey.—Creamery records during the years 1887 and 1888; analyses of commercial fertilizers [etc.]. By C. A. Goessmann. June, 1889.
35. Meteorological summary for the five months ending Oct. 31.—Feeding experiments with milch cows. By C. A. Goessmann. Nov., 1889.
36. Meteorological summary for the four months ending Feb. 28.—Some suggestions regarding the question, How can we improve in an economical way the productiveness of our farm lands?—Analyses of fodder articles.—On commercial fertilizers. By C. A. Goessmann. Mar., 1890.
37. Meteorological summary for the four months ending June 30.—Feeding experiments with lambs; analyses of fodder articles. By C. A. Goessmann. July, 1890.
38. Feeding experiments with milch cows, Dec., 1889 to July, 1890; analyses of commercial fertilizers. By C. A. Goessmann. Sept., 1890.
39. Meteorologifal summary for eight months ending Feb. 28.—Treatment of fungus diseases. By J. E. Humphrey. Apr., 1891.

40. Meteorological summary for four months ending June 30.—Some diseases of lettuce and cucumbers. By J. E. Humphrey.—Analyses of commercial fertilizers; feeding experiment with steers. By C. A. Goessmann. July, 1891.
41. Meteorological summary for two months ending Aug. 31.—Analyses of commercial fertilizers; feeding experiments with milch cows, Nov., 1890 to May, 1891. By C. A. Goessmann. Sept., 1891.
42. Feeding experiments with milch cows, Nov., 1891 to Mar., 1892; analyses of fodder articles. By C. A. Goessmann. June, 1892.
43. Meteorological summary for seven months ending July 31.—Winter feeding experiments with lambs, Nov., 1891 to May, 1892; analyses of commercial fertilizers. By C. A. Goessmann. Aug., 1892.
44. Meteorological summary for August and September.—Feeding experiments with steers. By C. A. Goessmann. Oct., 1892.
45. On fodder articles and fodder supplies. By C. A. Goessmann. Nov., 1892.
46. Never published. This number has been given to the following publications: Analyses of commercial fertilizers, by C. A. Goessmann, Nov., 1892 and Circular on commercial fertilizers, by C. A Goessmann, Mar., 1893.
47. Meteorological summary, January, February, March, and April, 1892–93.—Feeding experiments with pigs; miscellaneous analyses of feeding stuffs. By J. B. Lindsey and C. A. Goessmann. May, 1893.
48. Meteorological summary, May and June, 1892–93.—Analyses of commercial fertilizers collected during 1893; analyses of commercial fertilizers and manurial substances sent on for examination; analyses of fodder articles; trade values of fertilizer ingredients. By C. A. Goessmann. June, 1893.
49. Meteorological summary for July, 1892–93.—Analyses of commercial fertilizers collected during 1893; analyses of commercial fertilizers and manurial substances sent on for examination. By C. A. Goessmann. Aug., 1893.
50. Meteorological summary for August and September, 1892–93.—Analyses of commercial fertilizers collected during 1893; analyses of commercial fertilizers and manurial substances sent on for examination; trade values of fertilizing ingredients. By C. A. Goessmann. Oct., 1893.
51. General discussion of commercial fertilizers; analyses of fodder articles. By C. A. Goessmann. Mar., 1894.
52. Meteorological summary for five months ending May 31, 1894.—Analyses of commercial fertilizers collected during 1894; analyses of commercial fertilizers and manurial substances sent on for examination; trade values of commercial fertilizers. By C. A. Goessmann. June, 1894.
53. Meteorological summary for June, 1894.—Analyses of commercial fertilizers collected during 1894; analyses of commercial fertilizers and manurial substances sent on for examination; trade values of fertilizing ingredients. By C. A. Goessmann. July, 1894.
54. Meteorological summary for July, 1894.—Analyses of commercial fertilizers collected during 1894; analyses of commercial fertilizers and manurial substances sent on for examination; trade values of fertilizing ingredients. By C. A. Goessmann. Aug., 1894.
55. Meteorological summary for August and September, 1894.—Analyses of commercial fertilizers collected during 1894; analyses of commercial fertilizers and manurial substances sent on for examination; trade values of fertilizing ingredients. By C. A. Goessmann. Oct., 1894.
56. Meteorological summary for October, 1894.—Analyses of commercial fertilizers collected during 1894; analyses of fodder articles; trade values of fertilizing ingredients. By C. A. Goessmann. Nov., 1894.
57. Meteorological record for January–February, 1895.—Analyses of human food articles (oats); analyses of fodder articles; analyses of manurial substances; trade values. By C. A. Goessmann. Mar., 1895.

INDEXES.

Index number [of reports of] Massachusetts State Agricultural Experiment Station, Vols. 1–12, 1883–1894. By C. A. Goessmann. 1905.

Hatch Experiment Station of the Massachusetts Agricultural College, Amherst, 1888–1906. Massachusetts Agricultural Experiment Station, Amherst.

BULLETINS.

1. Division of entomology. By C. H. Fernald.—Horticultural department. By S. T. Maynard.—Department of meteorology. By C. D. Warner. July, 1888.
2. Division of entomology. By C. H. Fernald.—Division of horticulture. By S. T. Maynard. Oct., 1888.
3. Tuberculosis. By C. H. Fernald. Jan., 1889.
4. Experiments in heating greenhouses, steam heat versus hot water; greenhouse walls; glazing experiment; [greenhouse pests and plant diseases]; testing new varieties [of fruits and vegetables]. By S. T. Maynard. Apr., 1889.
5. Household pests. By C. H. Fernald. July, 1889.
6. Greenhouse heating; steam versus hot water; strawberries. By S. T. Maynard.—Fungous diseases of plants. By J. E. Humphrey. Oct., 1889.
7. Small fruits. By S. T. Maynard.—Girdling the grape vine. By Jabez Fisher.—Report upon vegetables; protection of fruit trees from mice, rabbits, and woodchucks. By S. T. Maynard.—General results of a trial of a few Japanese crops. By W. P. Brooks.—A dangerous insect pest in Medford, the gipsy moth (*Ocneria dispar* L.). By C. H. Fernald. Jan., 1890.
8. Experiments in greenhouse heating, steam versus hot water; some observations on peach yellows. By S. T. Maynard.—How far may a cow be tuberculous before her milk becomes dangerous as an article of food? By H. C. Ernst. Apr., 1890.
9. Soil tests with fertilizers. By W. P. Brooks [and others]. May, 1890.
10. Report on special fertilizers for greenhouse crops; [injury to peaches from cold and from plum curculio]; report on small fruits. By S. T. Maynard. Oct., 1890.
11. Report on strength of rennet; report on hay caps; report on Flandres oats; report on prevention of potato rot. By W. P. Brooks.—Report on fungicides and insecticides on fruits. By S. T. Maynard. Jan., 1891.
12. Report on insects. By C. H. Fernald. Apr., 1891.
13. Directions for the use of fungicides and insecticides. By S. T. Maynard.—[Girdling grapes]. By Jabez Fisher. Apr., 1891.
14. Fertilizers for corn. By W. P. Brooks [and others]. May, 1891.
15. Experiments in greenhouse heating; special fertilizers for plants under glass; report on varieties of strawberries; report on varieties of blackberries and raspberries. By S. T. Maynard. Oct., 1891.
16. A brief summary of results in electroculture gathered from various sources; also some experiments made at the station with lettuce grown under the influence of dynamical electricity. By C. D. Warner. Jan., 1892.

17. Experiments with fungicides and insecticides; testing new varieties of grapes and peaches; protection of peach buds; amonut of copper on sprayed fruit; the Siberian crab as a stock; girdling grape vines; keeping qualities of grapes; report of spraying apparatus; outline of work for 1892. By S. T. Maynard [and others]. Apr., 1892.
18. Fertilizers for potatoes, oats, and corn; the use of muriate of potash with manures for corn; "special corn" fertilizers versus fertilizer richer in potash; comparison of corn and millet as grain crops; proximate composition of potatoes as affected by fertilizers; reports on miscellaneous crops: Oats, hemp, flax, English wheats, Japanese millets and beans. By W. P. Brooks [and others]. Apr., 1892.
19. Report on insects. By C. H. Fernald. May, 1892.
20. Report on insects. By C. H. Fernald. Jan., 1893.
21. Report on fruits. By S. T. Maynard. Apr., 1893.
22. Report on fruits. By S. T. Maynard. Oct., 1893.
23. Electro-culture. By C. D. Warner. Dec., 1893.
24. Insecticides; the horn fly. By C. H. Fernald. Apr., 1894.
25. Fungicides and insecticides; tests of grapes. By S. T. Maynard. Apr., 1894.
26. Strawberries, blackberries, raspberries. By S. T. Maynard. Oct., 1894.
27. History of tuberculosis in college herd: use of tuberculin in diagnosis; outbreak of bovine rabies; poisoning of cattle by nitrate of soda. By J. B. Paige. Dec., 1894.
28. Cankerworms, army worm, corn worm, red-humped apple tree caterpillar, Antiopa butterfly, currant stem girdler, imported elm bark louse, greenhouse Orthezia. By C. P. Lounsbury. Apr., 1895.
29. Fungicides, insecticides, spraying calendar. By S. T. Maynard. May, 1895.
30. Commercial fertilizers. By C. A. Goessmann. June, 1895.
31. Commercial fertilizers. By C. A. Goessmann. July, 1895.
32. Commercial fertilizers. By C. A. Goessmann. Aug., 1895.
33. Glossary of fodder terms. By E. B. Holland. Oct., 1895.
34. Analyses of manurial substances sent on for examination; analyses of licensed fertilizers collected by the agent of the station during 1895. By C. A. Goessmann. Oct., 1895.
35. The agricultural value of bone-meal. By Charles Wellington. Dec., 1895.
36. Imported elm-leaf beetle; maple Pseudococcus; Abbot sphinx. By R. A. Cooley.—The San José scale. By C. H. Fernald. Feb., 1896.
37. Report on fruits; insecticides; fungicides. By S. T. Maynard and J. H. Putnam. Mar., 1896.
38. General discussion on commercial fertilizers: analyses of fertilizing materials sent on for examination; observations regarding the composition of Paris green; observations concerning the action of muriate of postash on the lime constituents of the soil. By C. A. Goessmann. Mar., 1896.
39. Economic feeding of milch cows. By J. B. Lindsey. Apr., 1896.
40. Analyses of manurial substances sent on for examination: analyses of licensed fertilizers collected by the agent of the station during 1896. By C. A. Goessmann. July, 1896.
41. On the use of tuberculin. By B. Bang. Aug., 1896. From Deut. Ztschr. Thiermed., 22 (1895) p. 1–31.
42. Analyses of manurial substances sent on for examination; analyses of licensed fertilizers collected by the agent of the station during 1896; new laws for the regulation of the trade in commercial fertilizers in Massachusetts. By C. A. Goessmann. 1896.
43. Electro-germination. By A. S. Kinney. Jan., 1897.
44. Variety tests of fruits; tests of vegetable seeds; [spraying for the destruction of insects and fungous growths]. By S. T. Maynard, J. H. Putnam and S. W. Fletcher. Mar., 1897.
45. General discussion on commercial fertilizers; analyses of fertilizing materials sent on for examination; new fertilizer law. By C. A. Goessmann. Mar., 1897.
46. The habits, food, and economic value of the American toad. By A. H. Kirkland. Apr., 1897.
47. On field experiments with tobacco in Massachusetts, 1893–1896. By C. A. Goessmann. Apr., 1897.
48. Analyses of manurial substances sent on for examination; analyses of licensed fertilizers collected by the agent of the station during 1897. By C. A. Goessmann. July, 1897.
49. Analyses of manurial substances sent on for examination; analyses of licensed fertilizers collected by the agent of the station during 1897. By C. A. Goessmann. Nov., 1897.
50. The feeding value of salt marsh hay. By J. B. Lindsey and B. K. Jones. Jan., 1898.
51. Analyses of manurial substances sent on for examination; analyses of licensed fertilizers collected by the agent of the station during 1897. By C. A. Goessmann. Feb., 1898.
52. Variety tests of fruits; spraying calendar. By S. T. Maynard. Mar., 1898.
53. Concentrated feed stuffs. By J. B. Lindsey [and others]. Apr., 1898.
54. Analyses of manurial substances sent on for examination; analyses of licensed fertilizers collected by the agent of the station during 1898. By C. A. Groessmann. July, 1898.
55. Nomatode worms. By G. E. Stone and R. E. Smith. Nov., 1898.
56. Concentrated feed stuffs. By J. B. Lindsey [and others]. Nov., 1898.
57. Analyses of manurial substances sent on for examination; analyses of licensed fertilizers collected by the agent of the station during 1898. By C. A. Goessmann. Nov., 1898.
58. Manurial requirements of crops. By W. P. Brooks.—[Notes on the proper handling of barnyard manure]. By Charles Wellington. Mar., 1899.
59. Analyses of manurial substances sent on for examination; analyses of licensed fertilizers collected by the agent of the station during 1898. By C. A. Goessmann. Mar., 1899.
60. Insecticides, fungicides, spraying calendar. By S. T. Maynard. Apr., 1899.
61. The asparagus rust in Massachusetts. By G. E. Stone and R. E. Smith. Apr., 1899.
62. Analyses of manurial substances sent on for examination; analyses of licensed fertilizers collected by the agent of the station during 1899. By C. A. Goessmann. July, 1899.
63. Analyses of manurial substances sent on for examination; analyses of licensed fertilizers collected by the agent of the station during 1899. By C. A. Goessmann. Nov., 1899.
64. Concentrated feed stuffs. By J. B. Lindsey [and others]. Feb., 1900.
65. Analyses of manurial substances sent on for examination; analyses of licensed fertilizers collected by the agent of the station during 1899; instructions regarding the sampling of materials; discussion of trade values; instructions to manufacturers of commercial fertilizers. By C. A. Goessmann. Mar., 1900.
66. Variety tests of fruits; fertilizers for fruits; thinning fruits; pruning. By S. T. Maynard. Mar., 1900.
67. The grass thrips; treatment for thrips in greenhouses. By H. T. Fernald and W. E. Hinds. May, 1900.
68. Analyses of manurial substances sent on for examination; analyses of licensed fertilizers collected by the agent of the station during 1900. By C. A. Goessmann. July, 1900.
69. The rotting of greenhouse lettuce. By G. E. Stone and R. E. Smith. Sept., 1900.
70. Analyses of manurial substances sent on for examination; analyses of licensed fertilizers collected by the agent of the station during 1900. By C. A. Goessmann. Nov., 1900.
71. Concentrated feed stuffs; condimental stock and poultry foods. By J. B. Lindsey [and others].—The utility of condimental foods and condition powders. By J. B. Paige. Jan., 1901.
72. Summer forage crops. By J. B. Lindsey, E. B. Holland, and P. H. Smith, jr. Mar., 1901.

73. Orchard experiments; fertilizers for fruits; thinning fruits; spraying fruits. By S. T. Maynard and G. A. Drew. Mar., 1901.
74. Analyses of manurial substances sent on for examination; analyses of Paris green and other insecticides; instructions regarding the sampling of materials; discussion of trade values of fertilizing ingredients; laws for the regulation of the trade in commercial fertilizers; instructions to manufacturers of commercial fertilizers. By C. A. Goessmann. Mar., 1901.
75. Analyses of manurial substances sent on for examination; analyses of licensed fertilizers collected by the agent of the station during 1901. By C. A. Goessmann. July, 1901.
76. The imported elm leaf-beetle. By H. T. Fernald. July, 1901.
77. Analyses of manurial substances sent on for examination; analyses of licensed fertilizers collected by the agent of the station during 1901. By C. A. Goessmann. Nov., 1901.
78. Concentrated feedstuffs. By J. B. Lindsey [and others]. Jan., 1902.
79. Growing China asters. By R. E. Smith. Feb., 1902.
80. Fungicides, insectides, spraying calendar. By G. E. Stone, H. E. Fernald, and S. T. Maynard. Mar., 1902.
81. Analyses of manurial substances sent on for examination; analyses of Paris green; instructions to manufacturers of commercial fertilizers; analyses of licensed fertilizers collected by the agent of the station during 1901; instructions regarding the sampling of materials. By C. A. Goessmann.—Contribution on the treatment of barnyard manure with absorbents. By H. D. Haskins.—Discussion of trade values of fertilizing ingredients. By C. A. Goessmann. Mar., 1902.
82. Orchard management; cover crops in orchards; pruning of orchards; report on fruits. By S. T. Maynard and G. A. Drew. Apr., 1902.
83. Analyses of manurial substances sent on for examination; analyses of licensed fertilizers collected by the agent of the station during 1902. By C. A. Goessmann. July, 1902.
84. Analyses of manurial substances sent on for examination; analyses of licensed fertilizers collected by the agent of the station during 1902. By C. A. Goessmann. Nov., 1902.
85. Concentrated feeds. By J. B. Lindsey [and others]. June, 1903.
86. Orchard treatment for the San José scale; one year's experiments in Massachusetts. By H. T. Fernald Feb., 1903.
87. Cucumbers under glass. By G. E. Stone. Feb., 1903.
88. A catalogue of the Coccidae of the world. By Maria E. Fernald. (Special Bulletin.) Mar., 1903.
89. Analyses of manurial substances sent on for examination; discussion of trade vaues of fertilizing ingredients for 1903; discussion on the ash analyses of plants; instructions regarding sampling. By C. A. Goessmann. Mar., 1903.
90. Analyses of manurial substances sent on for examination; analyses of licensed fertilizers collected by the agent of the station during 1903. By C. A. Goessmann. July, 1903.
91. Injuries to shade trees from electricity. By G. E. Stone. Aug., 1903. See 156.
92. Analyses of manurial substances sent on for examination; analyses of licensed fertilizers collected by the agent of the station during 1903. By C. A. Goessmann. Nov., 1903.
93. Concentrated feeds. By J. B. Lindsey [and others]. Dec., 1903.
94. Distillery and brewery by-products. J. B. Lindsey, E. B. Holland, and P. H. Smith. Mar., 1904.
95. Analyses of manurial substances forwarded for examination; instructions regarding sampling, notes on barnyard manure; discussion of trade value of fertilizing ingredients for 1904. By C. A. Goessmann. Mar., 1904.
96. Fungicides, insecticides, spraying calendar. By G. E. Stone, H. T. Fernald, and F. A. Waugh. May, 1904.
97. A farm wood lot. By F. A. Waugh. May, 1904.
98. Inspection of concentrates. By J. B. Lindsey [and others]. July, 1904.
99. Dried molasses-beet-pulp. By J. B. Lindsey [and others].—The nutrition of horses. By J. B. Lindsey and P. H. Smith. July, 1904.
100. Analyses of manurial substances forwarded for examination; analyses of licensed fertilizers collected in the general markets; market values of fertilizing ingredients. By C. A. Goessmann. July, 1904.
101. Inspection of concentrates. By J. B. Lindsey [and others]. Dec., 1904.
102. Analyses of manurial substances forwarded for examination; analyses of licensed fertilizers collected in the general markets; market values of fertilizing ingredients. By C. A. Goessmann. Dec., 1904.
103. Analyses of manurial substances forwarded for examination; instructions regarding the sampling of materials; instructions to manufacturers of commercial fertilizers; discussion of trade values of fertilizing ingredients for 1905. By C. A. Goessmann. Mar., 1905.
104. Analyses of manurial substances forwarded for examination; market values of fertilizing ingredients; analyses of licensed fertilizers collected in the general markets. By C. A. Goessmann. July, 1905.
105. Tomatoes under glass; methods of pruning tomatoes. By G. E. Stone. Aug., 1905.
106. Condimental stock and poultry foods. By J. B. Lindsey [and others]. Sept., 1905.
107. Analyses of manurial substances forwarded for examination; market values of fertilizing ingredients; analyses of licensed fertilizers collected in the general markets. By C. A. Goessmann. Dec., 1905.
108. Inspection of concentrates. By J. B. Lindsey [and others]. Jan., 1906.
109. Analyses of manurial substances forwarded for examination; analyses of Paris green and other insecticides; instructions regarding the sampling of materials; instructions to manufacturers of commercial fertilizers; discussion of trade values of fertilizing ingredients for 1906. By C. A. Goessmann. Mar., 1906.
110. Market milk. By J. B. Lindsey and P. H. Smith. June, 1906.
111. Analyses of manurial substances forwarded for examination; analyses of licensed fertilizers collected in the general markets; market values of fertilizing ingredients. By C. A. Goessmann. July 1906.
112. The examination of cattle and poultry foods. By J. B. Lindsey [and others]. Jan., 1907.
113. Analyses of manurial substances forwarded for examination; analyses of licensed fertilizers collected in the general markets; market values of fertilizing ingredients. By C. A. Goessmann. Jan., 1907.
114. The oriental moth (*Cnidocampa flavescens* Walk.), a recent importation. By H. T. Fernald. Jan., 1907.
115. Preliminary report on cranberry insects. By H. J. Franklin. Feb., 1907. See 126.
116. The San José scale and experiments for its control. By H. T. Fernald. Mar., 1907.
117. Trade values and fertilizer and soil analyses. By C. A. Goessmann and H. D. Haskins. Mar., 1907.
118. Molasses and molasses feeds for farm stock. By J. B. Lindsey, E. B. Holland and P. H. Smith. Nov., 1907.
119. Inspection of commercial fertilizers. H. D. Haskins, E. T. Ladd, and W. E. Dickinson. Dec., 1907.
120. Inspection of commercial feed stuffs. By P. H. Smith [and others]. Feb., 1908.
121. Seed separation and germination. By G. E. Stone. Feb., 1908.
122. Poultry keeping for egg production. By W. P. Brooks. Mar., 1908.
123. Fungicides, insecticides and spraying directions. By G. E. Stone and H. T. Fernald. Apr., 1908.
124. Bee diseases in Massachusetts. By E. N. Gates. July, 1908.

125. Shade trees. E. A. Start, G. E. Stone, and H. T. Fernald. Oct. 1, 1908. See 170.
126. How to fight cranberry insects. By H. J. Franklin. Nov., 1908. A revision of 115.
127. Inspection of commercial fertilizers. By H. D. Haskins, L. S. Walker, and J. C. Reed. Nov., 1908.
128. Inspection of commercial feed stuffs, by P. H. Smith and P. V. Goldsmith. Jan., 1909.
129. Bee keeping in Massachusetts. By B. N. Gates. June, 1909.
130. A summary of meteorological observations [1836–1908]. By J. E. Ostrander. June, 1909.
131. Inspection of commercial fertilizers for the season of 1909. By H. D. Haskins, L. S. Walker, and P. V. Goldsmith. Dec., 1909.
132. Inspection of commercial feed stuffs. By P. H. Smith and J. C. Reed. Jan., 1910.
133. Green crops for summer soiling. By J. B. Lindsey. Feb., 1910.
134. The hay crop in Massachusetts. By W. P. Brooks. May, 1910.
135. Inspection of commercial fertilizers for the season of 1910. By H. D. Haskins, L. S. Walker, and J. F. Merrill. Nov., 1910.
136. Inspection of commercial feed stuffs. By P. H. Smith [and others]. Feb., 1911.
137. The rational use of lime. By W. P. Brooks.—The distribution, composition, and cost of lime. By H. D. Haskins, J. F. Merrill, and J. B. Lindsey. Apr., 1911.
138. Tomato diseases. By G. E. Stone. June, 1911.
139. Inspection of commercial feed stuffs. By P. H. Smith, C. L. Perkins, and J. C. Reed. Oct., 1911.
140. Inspection of commercial fertilizers. By H. D. Haskins [and others]. Dec., 1911.
141. The microscopic identification of cattle foods. By G. H. Chapman. Sept., 1912.
142. Inspection of commercial feed stuffs. By P. H. Smith, G. R. Pierce, and R. W. Ruprecht. Oct., 1912.
143. Inspection of commercial fertilizers. By H. D. Haskins [and others]. Dec., 1912.
144. The relation of light to greenhouse culture. By G. E. Stone. July, 1913.
145. Record of the station dairy herd and the cost of milk production. By J. B. Lindsey. Sept., 1913.
146. Inspection of commercial feed stuffs. By P. H. Smith and C. L. Beals. Oct., 1913.
147. Inspection of commercial fertilizers for the season of 1913. By H. D. Haskins [and others]. Dec., 1913.
148. On the diagnosis of infection with *Bacterium pullorum* in the domestic fowl. By G. E. Gage, B. H. Paige, and H. W. Hyland. Apr., 1914.
149. A study of variation in apples. By J. K. Shaw. Apr., 1914.
150. Reports on experimental work in connection with cranberries. By H. J. Franklin and F. W. Morse. Apr., 1914.
151. The determination of acetyl number. By E. B. Holland. Apr., 1914.
152. The digestibility of cattle foods. By J. B. Lindsey and P. H. Smith. May, 1914.
153. A summary of meteorological records for twenty-five years, 1889 to 1913, inclusive. By J. E. Ostrander. June, 1914.
154. Alfalfa. By W. P. Brooks. June, 1914.
155. New fertilizer materials and by-products. By H. D. Haskins.—Cocoanut meal. By J. B. Lindsey. July, 1914.
156. Electrical injuries to trees. By G. E. Stone. Oct., 1914. A revision of 91.
157. The marguerite fly (*Phytomyza chrysanthememi* Kowarz). By M. T. Smulyan. Nov., 1914.
158. The composition, digestibility and feeding value of molassine meal, cottonseed meal and hulls, cocoa shells, grain screenings, flax shives, Mellen's food refuse, and Postum cereal residue (CXX feed). By J. B. Lindsey and P. H. Smith. Dec., 1914.
159. The technical description of apples. By J. K. Shaw. Dec., 1914.
160. Report of cranberry substation for 1914. By H. J. Franklin. Apr., 1915.
161. The effect on a crop of clover of liming the soil. By F. W. Morse.—Toxic effect of iron and aluminum salts on clover seedlings. By R. W. Ruprecht. Apr., 1915.
162. Phosphates in Massachusetts agriculture: Importance, selection, and use. By W. P. Brooks. May, 1915.
163. Bacillary white diarrhea (*Bacterium pullorum* infection) in young chicks in Massachusetts. By G. E. Gage and B. H. Paige. Aug., 1915.
164. Substitutes for milk in the rearing of dairy calves; the cost of rearing a dairy cow. By J. B. Lindsey. Nov., 1915.
165. The effect of sulfate of ammonia on soil. By R. W. Ruprecht and F. W. Morse. Nov., 1915.
166. Improved methods for fat analysis. By E. B. Holland, J. C. Reed, and J. P. Buckley. Dec., 1915.
167. The relation of hydrogen ion concentration of media to the proteolytic activity of *Bacillus subtilis;* proteolysis of *Strept. erysipelatis* and *Strept. lacticus* compared under different hydrogen ion concentration. By Arao Itano. Jan., 1916.
168. Report of cranberry substation for 1915. By H. J. Franklin. May, 1916.
169. Connecticut Valley onion supply and distribution. By A. E. Cance, W. L. Machmer, and F. W. Read. Sept., 1916.
170. Shade trees: Characteristics, adaptation, diseases, and care. By G. E. Stone. Sept., 1916. Supersedes 125.
171. A chemical study of the asparagus plant. By F. W. Morse. Dec., 1916.
172. Experiments in keeping asparagus after cutting. By F. W. Morse. Mar., 1917.
173. The cost of distributing milk in six cities and towns in Massachusetts. By A. E. Cance and R. H. Ferguson. May, 1917.
174. The composition, digestibility, and feeding value of pumpkins. By J. B. Lindsey. Nov., 1917.
175. Mosaic disease of tobacco. By G. H. Chapman. May, 1917.
176. The cause of the injurious effect of sulfate of ammonia when used as a fertilizer. By R. W. Ruprecht and F. W. Morse. Oct., 1917.
177. Potato plant lice and their control. By W. S. Regan. Oct., 1917.
178. The European corn borer (*Pyrausta nubilalis* Hubner), a recently established pest in Massachusetts. By S. C. Vinal. Dec., 1917.
179. The greenhouse red spider (*Tetranychus bimaculatus* Harvey), attacking cucumbers and methods for its control. By S. C. Vinal. Nov., 1917.
180. Report of the cranberry substation for 1916. By H. J. Franklin.—Observations on the spoilage of cranberries due to lack of proper ventilation. By C. L. Shear, N. E. Stevens, and B. A. Rudolph. Nov., 1917.
181. Digestion experiments with sheep. By J. B. Lindsey, C. L. Beals, and P. H. Smith. Nov., 1917.
182. Soy beans (*Glycine hispida*) as human food. By Arao Itano. Mar., 1918.
183. Rose canker and its control. By P. J. Anderson. May, 1918.
184. Late dormant versus delayed dormant or green tip treatment for the control of apple aphids. By W. S. Regan. July, 1918.
185. The inheritance of seed coat color in garden beans. By J. K. Shaw and J. B. Norton. July, 1918.
186. The composition, digestibility and feeding value of alfalfa; the value of corn bran for milk production By J. B. Lindsey and C. L. Beals. Nov., 1918.
187. Clarification of milk, I. By C. E. Marshall [and others]. Nov., 1918.

188. The nutrition of the horse. By J. B. Lindsey. Dec., 1918.
189. The European corn borer and its control. By S. C. Vinal and D. J. Caffrey. Mar., 1919.
190. The propagation of apple trees on their own roots. By J. K. Shaw. Sept., 1919.
191. Practical results from studies on egg production. By H. D. Goodale. Oct., 1919.
192. Seventh report of the cranberry substation, 1917–1919. By H. J. Franklin. Oct., 1919.
193. The supply and distribution of Connecticut Valley cigar leaf tobacco. By S. H. DeVault. Oct., 1919.
194. A fertilizer experiment with asparagus: Description of the experiment. By F. W. Morse.—Comments and conclusions. By W. P. Brooks. Dec., 1919.
195. Tobacco investigations: Progress report, including miscellaneous observations on tobacco. By G. H. Chapman. Mar., 1920.
196. Methods of applying manure. By W. P. Brooks. Sept., 1920.
197. The nutritive value of cattle feeds: I, Velvet bean feed for farm stock. By J. B. Lindsey and C. L. Beals. Sept., 1920.
198. Studies of cranberries during storage: Chemical studies. By F. W. Morse and C. P. Jones.—Fungi studies. By B. A. Rudolph and H. J. Franklin. Sept., 1920.
199. Broodiness in domestic fowl: Data concerning its inheritance in the Rhode Island Red breed. By H. D. Goodale, Ruby Sanborn, and Donald White. Sept., 1920.
200. The nutritive value of cattle feeds: Oat by-products for farm stock. By J. B. Lindsey and C. L. Beals. Oct., 1920. Also popular edition.

SPECIAL BULLETINS.

A dangerous insect pest in Medford: The gipsy moth (*Ocneria dispar* L.). By C. H. Fernald. Nov., 1889. Spanish Bull 7.
On the most profitable use of commercial manures? By Paul Wagner. Translated by Charles Wellington. May, 1890. Also published in Mass. Agr. College Ann. Rpt., 27 (1889), p. 58–99.
Green manuring, by Julius Kuhn. Translated and condensed by E. W. Allen. Jan., 1894. From Ztschr. Landw. Cent. Ver. Sachsen, 50 (1893), No. 1, p. 3–13; No. 3, p. 95–101; No. 4, p. 117–128. Also published in Mass. Agr. College Ann. Rpt., 31 (1893), p. 87–97.
The Brown-tail moth. By C. H. Fernald and A. H. Kirkland. July, 1897.
The Pterophoridae of North America. By C. H. Fernald. Jan., 1898. Also published in Mass. Agr. College Ann. Rpt., 35 (1898), p. 83–162. Revised reprint, July, 1898.
The coccid genera Chionaspis and Hemichionaspis. By R. A. Cooley. Aug., 1899.
The dairy law and its results: Dairy law; inspection of glassware. By J. B. Lindsey.—Inspection of Babcock machines. By N. J. Hunting.—The Babcock test. By E. B. Holland.—Creameries and milk depots in Massachusetts. July, 1903.

TECHNICAL BULLETINS.

1. The greenhouse Aleyrodes (*A. vaporariorum* Westw.) and the strawberry Aleyrodes (*A. packardi* Morrill): A study of the insects and of their treatment. By A. W. Morrill. Aug., 1903.
2. The graft union. By F. A. Waugh. Oct., 1904.
3. The blossom end rot of tomatoes. By Elizabeth H. Smith. Apr., 1907.

INDEXES.

Index to all bulletins and annual reports published to date, June, 1895. 1895.
Index [to] Bulletins [1–114] and Reports [1–19], 1888–[Jan.], 1907. 1907.

MICHIGAN.

Experiment Station of Michigan State Agricultural College, East Lansing.

BULLETINS.

Bulletins 1–33, 1885–1888, were issued by the Michigan Agricultural College prior to the organization of the agricultural experiment station under the Hatch Act. Publications of the station with the exception of quarterly bulletins have been reprinted in the annual reports of the Michigan State Board of Agriculture.

1. Early amber cane as a forage crop. By R. C. Kedzie [and others]. Mar., 1885.
2. [Seed testing. By Louis Knapper.] Apr., 1885.
3. The black wheat stalk Isomoma. By A. J. Cook. May, 1885.
4. Feeding experiments. By Samuel Johnson. May, 1885.
5. The vitality of seeds buried in the soil. By W. J. Beal. July, 1885.
6. Diseases of farm animals. By E. A. A. Grange. Sept., 1885.
7. Notes on fruits: notes on vegetables; notes on some hardy and desirable ornamental trees and shrubs. By L. H. Bailey. Oct., 1885.
8. Wintering bees. By A. J. Cook. Nov., 1885.
9. Marl. By R. C. Kedzie. Dec., 1885.
10. A disease among horses the result of injudicious feeding. By E. A. A. Grange. Feb., 1886.
11. Making a lawn; mixed lawn grass seeds analyzed. By W. J. Beal. Mar., 1886.
12. Hints on rural adornment, with lists of hardy ornamental plants; horticultural experiments and lists of recent acquisitions in fruits. By L. H. Bailey. Apr., 1886.
13. Potato culture: Varieties; experiments with different amounts of seed. By Samuel Johnson. [Apr., 1886.]
14. The codling moth and bark louse. By A. J. Cook. May, 1886.
15. Manurial value of ashes. By R. C. Kedzie. June, 1886.
16. Replies to questions about grasses. By W. J. Beal. July, 1886.
17. The carpet beetle. By A. J. Cook. Sept., 1886.
18. Wheat: Notes on different varieties; experiments with different amounts of seed. By Samuel Johnson. Sept., 1886
19. Notes on tomatoes. By L. H. Bailey. Sept., 1886.
20. Analysis of commercial fertilizers. By R. C. Kedzie. Oct., 1886. Corrected Dec., 1886.
21. Lessons on growing forest trees. By W. J. Beal. Nov., 1886.
22. Observations on a disease affecting the eyes of sheep. By E. A. A. Grange. Jan., 1887.
23. Varieties of apples for market. By L. H. Bailey. Feb., 1887.
24. Feeding steers of different breeds. By Samuel Johnson. Mar., 1887. See 44.
25. Laminitis, a disease of the foot of the horse. By E. A. A. Grange. Apr., 1887.
26. Plant lice and the codling moth. By A. J. Cook. May, 1887.
27. Commercial fertilizers: Inspection for 1887. By R. C. Kedzie. Aug., 1887.
28. Forest products of the museum of economic botany. By W. J. Beal. Sept., 1887.

29. A new contagious disease among horses in America. By E. A. A. Grange. Oct., 1877 [i. e. 1887].
30. Feeding steers of different breeds. By Samuel Johnson. Nov., 1887. See 44.
31. Being the annual report of the professor of horticulture and landscape gardening to the president of the college for the year 1887. By L. H. Bailey. Nov., 1887.
32. Proceedings of the forestry convention held in Grand Rapids, Mich., Jan. 26 and 27, 1888, under the auspices of the Independent Forestry Commission.
33. Hints for Arbor Day. By Samuel Johnson. Feb., 1888.

Michigan Agricultural Experiment Station.

BULLETINS.

34. Report of experiments with potatoes and oats. By Samuel Johnson. Mar., 1888.
35. Weather service department: Report of the director. By N. B. Conger. [Apr., 1888].
36. Experimental work among cattle. By E. A. A. Grange. May, 1888.
37. The jack pine plains. By R. C. Kedzie. June, 1888.
38. Experiments with wheat; experiments with plaster, ashes, and salt as a top-dressing for meadow and pasture lands. By Samuel Johnson. Aug., 1888.
39. Experiments with insecticides. By A. J. Cook. Oct., 1888.
40. Quantities of seed required for given lengths of drill; experiment in hybridizing; notes on radishes; notes on germination; effects of latitude on season of flowering and fruiting. By L. H. Bailey. Oct., 1888.
41. Warming water for dairy cows. By Samuel Johnson. Oct., 1888.
42. Experimental work among horses. By E. A. A. Grange. Nov., 1888.
43. Weather service department: Annual report of the director and the rainfall charts of Michigan. By N. B. Conger. Jan. 1889.
44. Feeding steers of different breeds [with an appendix consisting of Bulletins 24 and 30, reprinted]. By Samuel Johnson. Jan., 1889.
45. Why not plant a grove? By W. J. Beal. Mar., 1889.
46. Potatoes, roots, fertilizers, and oats. By Samuel Johnson. Mar., 1889.
47. Silos and ensilage. By Samuel Johnson. Apr., 1889.
48. Horticultural department: Potatoes; kale; experiments with squashes· tomatoes. By L. R. Taft. Apr., 1889.
49. Chemical composition of cornstalks, hay, and screenings. By R. C. Kedzie. May, 1889.
50. The grain plant louse. By A. J. Cook. June, 1889.
51. Enemies of the wheat aphis. By A. J. Cook. July, 1889.
52. Commercial fertilizers. By R. C. Kedzie. July, 1889.
53. Spraying with the arsenites. By A. J. Cook. Aug., 1889.
54. Experiments and observations on the jack-pine plains. By W. J. Beal. Oct., 1889.
55. Fruit testing at the South Haven substation. By T. T. Lyon. Dec., 1889.
56. Rib grass or narrow-leaved plantain in fields of clover. By W. J. Beal. Feb., 1890.
57. Vegetables: Comparative tests, methods of culture. By L. R. Taft. Mar., 1890.
58. Insecticides. By A. J. Cook. Mar., 1890.
59. Fruit list and apple scab. By L. R. Taft and B. T. Galloway. Apr., 1890.
60. Pigs—breed tests; potatoes—variety tests. By Eugene Davenport. Apr., 1890
61. Foul brood. By A. J. Cook. Apr., 1890. See Special 107.
62. The English sparrow. By C. B. Cook. May, 1890.
63. Greenhouse building and heating. By L. R. Taft. July, 1890.
64. Fertilizer analyses. By R. C. Kedzie. July, 1890.
65. Planting for honey. By A. J. Cook. Aug., 1890.
66. The plum curculio. By A. J. Cook. Sept., 1890.
67. Fruit testing at the South Haven substation. By T. T. Lyon. Oct., 1890.
68. The jack-pine plains; milk, ensilage, and fertilizer analyses. By R. C. Kedzie. Oct., 1890.
69. Feeding steers of different breeds. By Eugene Davenport. Nov., 1890.
70. Vegetables, varieties and methods [of culture]. By L. R. Taft. Jan., 1891.
71. Beet sugar. By R. C. Kedzie. Feb., 1891.
72. Six worst weeds. By W. J. Beal. Feb., 1891.
73. Kerosene emulsion; some new insects. By A. J. Cook and G. C. Davis. Apr., 1891.
74. Foot rot in sheep. By E. A. A. Grange. May, 1891.
75. Fertilizer analyses. By R. C. Kedzie. July, 1891.
76. Kerosene emulsion. By A. J. Cook and G. C. Davis. Oct., 1891.
77. Comparing the yield of old meadows with those recently seeded. By W. J. Beal. Nov., 1891.
78. Glanders and farcy. By E. A. A. Grange. Dec., 1891.
79. Vegetable tests. By L. R. Taft and H. P. Gladden. Jan., 1892.
80. Fruits. By T. T. Lyon. Jan., 1892.
81. Fruit notes: Strawberries, raspberries, Russian fruits, orchard fertilizers. By L. R. Taft. Mar., 1892.
82. Sugar beets: Results for 1891. By R. C. Kedzie. Mar., 1892.
83. Insecticides and fungicides. By L. R. Taft. Apr., 1892.
84. Roots versus silage for fattening lambs. By P. M. Harwood and F. B. Mumford. Apr., 1892.
85. Potato tests. By L. R. Taft. Apr., 1892.
86. Fertilizer analyses. By R. C. Kedzie. July, 1892.
87. Smut in oats and wheat: Jensen or hot-water treatment. By P. M. Harwood. Sept., 1892. Second and third editions issued.
88. Fruit report, South Haven substation. By T. T. Lyon. Dec., 1892.
89. Conformation of horse governing selection. By E. A. A. Grange. Dec., 1892. See also 110.
90. Vegetable tests. By L. R. Taft, H. P. Gladden, and R. J. Coryell. Feb., 1893.
91. Two plants for sandy land: [1], Spurry (*Spergula arvensis*). By Oscar Clute and O. Palmer.—[2], Flat pea (*Lathyrus silvestris*). By Oscar Clute and F. B. Mumford. Feb., 1893. Also, second edition.
92. Small fruit notes; spraying. By L. R. Taft, H. P. Gladden, and R. J. Coryell. Mar., 1893.
93. Potatoes; amounts of seed: Original experiments together with compilations from twelve other stations. By P. M. Harwood and P. G. Holden. Apr., 1893.
94. Birds of Michigan. By A. J. Cook. Apr., 1893. Second edition, Sept., 1893.
95. Potatoes. By P. M. Harwood [and others]. Apr., 1893.
96. Honey analyses. By A. J. Cook. July, 1893.
97. Fertilizer analyses. By R. C. Kedzie. July, 1893.
98. Locusts; the horn fly. By G. C. Davis. July, 1893.
99. Michigan soils. By R. C. Kedzie. July, 1893.
100. Eighty new strawberries. By L. R. Taft and H. P. Gladden. Aug., 1893.

101–102. 101, Composition of wheat and straw; composition of certain forage plants: adulteration of ground feed; mineral residues in sprayed fruits. By R. C. Kedzie.—102, Insects injurious to celery. By G. C. Davis. Dec., 1893.
103–106. 103, Peach and plum culture in Michigan. By L. R. Taft.—104, A year among fruits: Report of South Haven substation. By T. T. Lyon.—105, Michigan fruit list. By L. R. Taft.—106, Strawberries and raspberries. By L. R. Taft and H. P. Gladden. Feb., 1894.
107–110. 107, Fattening lambs. By F. B. Mumford.—108, Potatoes and potato scab. By L. R. Taft and R. J. Coryell.—109, Variety tests of vegetables. By L. R. Taft.—110, The external conformation of the horse. [A continuation of 89.] By E. A. A. Grange. Feb. [i. e. Feb.–Apr.], 1894.
111. The cultivated raspberries of the United States. By A. A. Crozier. June, 1894. Also second edition, Sept., 1894.
112. Fertilizer analyses. By R. C. Kedzie. June, 1894.
113–116. 113, Fattening lambs. By C. D. Smith and F. B. Mumford.—114, Rape as a forage plant. By C. D. Smith and F. B. Mumford.—115, Management of swamp lands: muck and marl. By R. C. Kedzie.—116, Insects of the clover field. By G. C. Davis. Oct., 1894.
117. Millet. By A. A. Crozier. Dec., 1894. See also special Bul. 2.
118. Fruits at South Haven. By T. T. Lyon. Jan., 1895.
119–120. 119, Potatoes. By L. R. Taft and U. P. Hedrick.—120, Vegetable novelties and notions. By L. R. Taft, H. P. Gladden and U. P. Hedrick. Feb., 1895.
121. Pests of orchard and Garden. By L. R. Taft and G. C. Davis. Apr., 1895.
122–124. 122, Small fruit notes. By L. R. Taft and H. P. Gladden.—123, Native plums and Russian cherries. By U. P. Hedrick.—124, The apple orchard. By L. R. Taft. Apr., 1895.
125. Crimson clover and other topics. By A. A. Crozier. June, 1895.
126. Fertilizer analyses. By R. C. Kedzie. June, 1895.
127–128. 127, Dairy records. By C. D. Smith.—128, Fattening lambs. By F. B. Mumford. Sept., 1895.
129–130. 129, Fruits at South Haven. By T. T. Lyon.—130, Fruits at the agricultural college. By L. R. Taft and H. P. Gladden. Feb., 1896.
131. Potatoes. By L. R. Taft.—Vegetable tests. By H. P. Gladden and U. P. Hedrick. Apr., 1896.
132. Climbing cutworms; control of the common granary insects; carpet beetles and clothes moths. By G. C. Davis. Apr., 1896.
133–134. 133, Tuberculosis. By E. A. A. Grange.—134, Pasteurization of milk. By C. D. Smith. June, 1896.
135. Fertilizer analyses. By R. C. Kedzie. July, 1896.
136–138. 136, Fattening lambs: A comparison of fodders. By H. W. Mumford.— 137, Feeding corn smut to dairy cows. By C. D. Smith.—138, Pig feeding. By C. D. Smith. Sept., 1896.
139–140. 139, Bacteria: What they are and what they do. By C. E. Marshall.—140, Ropiness in milk. By C. E. Marshall. Dec., 1896.
141. Forage crops and wheat. By A. A. Crozier. Feb., 1897.
142–144. 142, Small fruit trials at the college. By L. R. Taft and H. P. Gladden.—143, Fruit tests at South Haven. By T. T. Lyon.—144, Vegetables, old and new. By L. R. Taft, H. P. Gladden, and M. L. Dean. Mar. and Apr., 1897.
145. Fertilizer analyses. By R. C. Kedzie. June, 1897.
146–147. 146, Bacteria and the dairy. By C. E. Marshall.—147, Pasteurization of milk. By C. E. Marshall. July [i. e. July–Aug.], 1897.
148. Strawberries. By L. R. Taft and H. P. Gladden. Sept., 1897.
149. Feeding dairy cows. By C. D. Smith. Nov., 1897. See 234.
150. Sugar beets in Michigan in 1897. By C. D. Smith and R. C. Kedzie. Dec., 1897.
151–153. 151, Raspberries, blackberries, and grapes. By L. R. Taft and H. P. Gladden.—152, Report of South Haven substation. By T. T. Lyon.—153, Vegetable tests of 1897. By L. R. Taft, H. P. Gladden, and M. L. Dean. Feb., 1898.
154. Some experiments in corn-raising. By C. D. Smith. Mar., 1898.
155–156. 155, Spraying calendar for 1898. By L. R. Taft.—156, Preliminary report of State inspector of nurseries and orchards, and laws relating to the same. By L. R. Taft and D. W. Trine. Mar., 1898.
157–158. 157, Hog cholera. By G. A. Waterman.—158, Some experiments with poultry. By C. D. Smith and C. S. Brooks. May, 1898.
159. A study of normal temperatures and the tuberculin test. By C. E. Marshall. June, 1898.
160. Some insects of the year 1897. By W. B. Barrows and R. H. Pettit. June, 1898.
161. Fertilizer analyses. By R. C. Kedzie. July, 1898.
162. A sketch of the original distribution of white pine in lower peninsula. By C. F. Wheeler.—Present condition of forests and stumps land. By F. C. Skeels.—Reforesting stump lands. By W. J. Beal.—Meteorology of the forests. By R. C. Kedzie.—Forestry legislation. By C. D. Smith. Nov., 1898.
163. Strawberry culture: Notes on varieties. By L. R. Taft and H. P. Gladden. Nov., 1898.
164–165. 164, Methods and results of tillage. By M. W. Fulton.—165, Draft of farm implements. By M. W. Fulton. Dec., 1898.
166–167. 166, A grade dairy herd. By C. D. Smith.—167, A discussion of farm dairy methods. By G. H. True. Jan., 1899.
168. Michigan fruit list. By L. R. Taft. Feb., 1899.
169. Notes from the South Haven substation. By L. R. Taft and T. T. Lyon. Feb., 1899.
170–171. 170, Vegetable tests for 1898. By L. R. Taft, H. P. Gladden, and M. L. Dean.—171, Bush fruits for 1898. By L. R. Taft and H. P. Gladden. Mar. 1899.
172–173, 172, Combating disease-producing germs. By C. E. Marshall.—173, Killing the tubercle bacillus in milk. By C. E. Marshall. Mar., 1899.
174. Fertilizer analyses. By R. C. Kedzie and L. S. Munson. June, 1899.
175. Some insects of the year 1898. By W. B. Barrows and R. H. Pettit. July, 1899.
176. Strawberry notes for 1899. By L. R. Taft and H. P. Gladden. Aug., 1899.
177. South Haven report for 1899. By L. R. Taft and S. H. Fulton. Dec., 1899.
178. The production and marketing of wool. By H. W. Mumford. Jan., 1900.
179. Sugar beet investigations. By J. D. Towar. Feb., 1900.
180. Some insects of the year 1899. By R. H. Pettit. Mar., 1900.
181. Soil tests on upland and muck; clover and sand lucerne notes; wheat experiments. By J. D. Towar. Apr., 1900.
182–184. 182, A popular discussion of pure milk supply. By C. E. Marshall.—183. Gassy curd and cheese. By C. E. Marshall.—184, Tuberculosis and its management. By C. E. Marshall. May-June, 1900.
185. Fertilizer analyses. By R. C. Kedzie and L. H. Van Wormer. June, 1900.
186. [First report of the] Upper Peninsula Experiment Station. By C. D. Smith [and others]. Dec., 1900.
187. Report of South Haven Substation [for 1900]. By S. H. Fulton. Jan., 1901.
188. Experiments with sugar beets. By J. D. Towar. Feb., 1901.
189. Notes on strawberries. By L. R. Taft and M. L. Dean. Mar., 1901.
190. Vegetable tests for 1900. By L. R. Taft and M. L. Dean. Apr., 1901.
191. Shrinkage of farm products. By C. D. Smith, May, 1901.

192. Fertilizer analyses. By R. C. Kedzie and L. H. Van Wormer. June, 1901.
193. Some experiments with beet pulp as a stock food. By C. D. Smith [and others]. Nov., 1901.
194. Report of South Haven substation for 1901. By S. H. Fulton. Dec., 1901.
195–196. 195, Strawberry notes for 1901. By L. R. Taft and M. L. Dean.—196, Notes on vegetables. By L. R. Taft and M. L. Dean. Jan., 1902.
197. Sugar beet experiments, 1901. By J. D. Towar. Feb., 1902.
198. Sand lucerne. By J. D. Towar. Mar., 1902.
199. Cowpeas, soy beans, and winter vetch. By J. D. Towar. Apr., 1902.
200. Some insects of the year 1901. By R. H. Pettit. May, 1902.
201. Aëration of milk, a popular consideration of Special Bulletin 16. By C. E. Marshall. June, 1902.
202. Fertilizer analyses. By R. C. Kedzie and F. W. Robison. June, 1902.
203. Analyses of some of the commercial feeding stuffs of Michigan. By F. W. Robison. Dec., 1902.
204. Mosquitoes and other insects of the year 1902. By R. H. Pettit. Jan., 1903.
205–206. 205, Report of South Haven substation. By T. A. Ferrand.—206, Notes on small fruits. By M. L. Dean. Jan.–Feb., 1903.
207. Sugar-beet experiments, 1902. By C. D. Smith. Mar., 1903.
208. Michigan mushrooms: A few of the common edible fungi occurring in the State. By B. O. Longyear. Apr., 1903.
209. Vegetables and bush fruits. By L. R. Taft and M. L. Dean. June, 1903.
210. Fertilizer bulletin. By F. W. Robison. June, 1903.
211. Breakfast foods. By F. W. Robison. Apr., 1904.
212. Seed testing for farmers. By B. O. Longyear. Apr., 1904.
213–214. 213, Small fruits for 1904. By L. R. Taft and M. L. Dean.—214, Tomatoes and potatoes. By L. R. Taft and M. L. Dean. May, 1904.
215. Experiments with sugar beets in 1903. By C. D. Smith. June, 1904.
216. A brief review of Special Bulletins Nos. 24–26. By C. D. Smith. June, 1904.
217. Fertilizer bulletin. By F. W. Robison. July, 1904.
218. Some essential soil changes produced by micro-organisms. By S. F. Edwards. Aug., 1904.
219. Soil moisture: Its importance and management. By J. A. Jeffery. Sept., 1904.
220. Dried beet pulp and dried molasses beet pulp for fattening sheep. By R. S. Shaw. Oct., 1904.
221. The care and handling of milk: I, Milk, its purity and its impurity. By C. E. Marshall and W. R. Wright.—II, Practical conditions for the production of milk. By John Michels. Nov., 1904.
222. The codling moth in Michigan. By R. H. Pettit. Dec., 1904.
223. Part I, Equipment for breeding, feeding, care, and management of swine; Part II, Preliminary report on forage crops for swine. By R. S. Shaw. Jan., 1905.
224. Observations on the influence of nodules on the roots upon the composition of soy beans and cowpeas. by C. D. Smith and F. W. Robison. May, 1905.
225. Alfalfa in Michigan. By C. D. Smith. June, 1905.
226. The work at the substations: Review of Special Bulletins 27, 28, 30, and 31. By L. R. Taft and C. D. Smith. June, 1905.
227. Legumes other than alfalfa. By C. D. Smith. June, 1905.
228. The discussion of the milk problem from the standpoint of production. By C. E. Marshall. June, 1905.
229. A popular review of Special Bulletin No. 33 on "The associative action of bacteria in the souring of milk." By C. E. Marshall. June, 1905.
230. Some bacterial diseases of plants prevalent in Michigan. By W. G. Sackett. June, 1905.
231. Suggestions concerning legume inoculation. By L. T. Clark. June, 1905.
232. Fertilizer analyses. By A. J. Patten. July, 1905.
233. Insects of the garden. By R. H. Pettit. Dec., 1905.
234. Feeding dairy cows, review and partial reprint of Bulletin 149. By C. D. Smith. Feb., 1906.
235. Succotash as a soiling crop. By R. S. Shaw. Feb., 1906.
236. Spraying for potato blight in 1905. By C. A. McCue. Apr., 1906.
237. Digester tankage for swine. By R. S. Shaw. May, 1906.
238. First annual report of grade dairy herd. By R. S. Shaw and A. C. Anderson. May, 1906.
239. Fertilizer analyses. By A. J. Patten and Dorothea Moxness. Aug., 1906.
240. Roots supplementary to silage for dairy cows. By R. S. Shaw and H. W. Norton, jr. Sept., 1906.
241. A plan for the improvement of Michigan cattle. By R. S. Shaw. Sept., 1906.
242. Feeding whole grain. By R. S. Shaw and H. W. Norton, jr. Oct., 1906.
243. Cull beans as a food for swine. By R. S. Shaw and A. C. Anderson. Nov., 1906.
244. Insects new or unusual in Michigan. By R. H. Pettit. Dec., 1906.
245. Poultry raising. By J. G. Halpin. Jan., 1907.
246. The practical use of starters. By L. D. Bushnell and W. R. Wright. June, 1907.
247. Dried beet pulp for fattening steers. By R. S. Shaw and H. W. Norton, jr. June, 1907.
248. Fertilizer analyses. By A. J. Patten. Aug., 1907.
249. Protection of buildings from lightning. By A. R. Sawyer.—[System of lightning protection used on college barns.] By L. J. Smith. Aug., 1907. Supersedes Spec. Bul. 3.
250. College farm buildings. By R. S. Shaw and J. A. Jeffery. Oct., 1907.
251. Insects of 1907. By R. H. Pettit. Mar., 1908.
252. Fertilizer analyses. By A. J. Patten, S. L. Jodidi, and C. B. Collingwood. Aug., 1908.
253. Can the general farmer afford to grow apples? and suggestions on improving and spraying apple orchards. By S. B. Hartman and H. J. Eustace. Mar., 1909.
254. Preliminary report on wintering farm work horses. By H. W. Norton, jr. Mar., 1909.
255. Cement silos in Michigan. By J. A. Jeffery. May, 1909.
256. Fertilizer analyses. By A. J. Patten and C. B. Collingwood. Aug., 1909.
257. Rearing calves on skim milk and supplementary feed. By H. W. Norton, jr. Oct., 1909.
258. Insects of field crops. By R. H. Pettit. Feb., 1910.
259. Bean growing. By W. F. Raven. Mar., 1910.
260. Seeds of Michigan weeds. By W. J. Beal. Mar., 1910.
261. Baby beef production. By H. W. Norton, jr. Apr., 1910.
262. Suggestions on planting orchards. By O. K. White. July, 1910.
263. Fertilizer analyses. By A. J. Patten, O. B. Winter, and C. G. Clippert. Aug., 1910.
264. Second report of grade dairy herd. By A. C. Anderson. Apr., 1911.
265. Fertilizer analyses. By A. J. Patten, O. B. Winter, and C. G. Clippert. Aug., 1911.
266. Poultry house construction and yarding. By H. L. Kempster. Aug., 1911.
267. Michigan weeds. By W. J. Beal. Dec., 1911. Also revised edition by E. A. Bessey. Nov., 1915.
268. Wheat improvement. By F. A. Spragg. Aug., 1912.
269. Fertilizer analyses. By A. J. Patten, W. C. Marti, and Arao Itano. Sept., 1912.
270. Seed analyses for 1911 and 1912. By E. A. Bessey. Dec., 1912.
271. Alfalfa growing in Michigan. By V. M. Shoesmith. Feb., 1913.
272. Fertilizer analyses. By A. J. Patten [and others]. Sept., 1913.

273. Utilization of muck lands. By C. S. Robinson. June, 1914.
274. Fertilizer analyses. By A. J. Patten, O. B. Winter, and O. F. Jensen. Oct., 1914.
275. Fertilizer analyses. By A. J. Patten [and others]. Dec., 1915.
276. Commercial feeding stuffs. By A. J. Patten [and others]. Nov., 1916.
277. Studies in the cost of market milk production. By A. C. Anderson and F. T. Riddell. Dec., 1916.
278. Fertilizer analyses. By A. J. Patten [and others]. Dec., 1916.
279. Commercial feeding stuffs. By A. J. Patten [and others]. Sept., 1917.
280. Fertilizer analyses. By A. J. Patten [and others]. Dec., 1917.
281. Trees, shrubs and plants for farm and home planting. By C. P. Halligan. Feb., 1918.
282. Commercial feeding stuffs. By A. J. Patten [and others]. Sept., 1918.
283. Fertilizer analyses. By A. J. Patten [and others]. Dec., 1918.
284. Some information and suggestions concerning the use of phosphorus. By M. M. McCool, G. M. Grantham, and C. E. Millar. Jan., 1919.
285. Commercial feeding stuffs. By A. J. Patten [and others]. Sept., 1919.
286. Studies in the cost of milk production, 2. By F. T. Riddell and A. C. Anderson. Jan., 1920.
287. Fertilizer analyses. By A. J. Patten [and others]. Dec., 1919.
288. Commercial feeding stuffs. By A. J. Patten [and others]. Sept., 1920.
289. Corn growing in Michigan. By J. F. Cox and J. R. Duncan. Nov., 1920.
290. Soil fertility. By M. M. McCool, C. E. Millar, and G. M. Grantham. Dec., 1920.

QUARTERLY BULLETINS.

Quarterly Bulletins, Vol. 1, No. 1—Vol. 3, No. 2. Aug., 1918–Nov., 1920. Each number contains a variety of articles relating to agricultural practice, based upon investigational work of the station.

SPECIAL BULLETINS.

1. A year with bees. By R. L. Taylor. June, 1894.
2. Millet, abstract of Bulletin 117. By A. A. Crozier. Dec., 1894.
2. Pests of house and ornamental plants. By G. C. Davis. Nov., 1896.
3. Lightning rods and protection of farm buildings from lightning; a good road for five dollars. By R. C. Kedzie. Oct., 1896.
4. The apple orchard; spraying—why and how. By L. R. Taft. Nov., 1896.
5. Forecasts of frosts. By C. D. Smith and R. C. Kedzie. Dec., 1896.
6. Building silos. By C. D. Smith. Dec., 1896.
7. A new danger to fruit growers: The dreaded San José scale. By L. R. Taft. Jan., 1897.
8. Planting sugar beets. By R. C. Kedzie. Mar., 1897.
9. Suggestions on farm accounts. By C. D. Smith. Nov., 1898.
10. Sugar beets. By C. D. Smith and R. C. Kedzie. Feb., 1899.
11. Frozen trees and their treatment. By L. R. Taft. Mar., 1899.
12. Spraying calendar. By L. R. Taft and C. D. Smith. Mar., 1899.
13. Review of Professor Bang's work with contagious abortion. By C. E. Marshall. Dec., 1899.
14. Foul brood. By C. D. Smith and J. M. Rankin. June, 1901.
15. Spraying calendar. By L. R. Taft and C. D. Smith. Mar., 1902.
16. Aeration of milk. By C. E. Marshall. June, 1902.
17. Mosquitoes and other insects of the year 1902. By R. H. Pettit. Jan., 1903.
18. Sugar beets in the Upper Peninsula. By C. D. Smith and L. M. Geismar. Mar., 1903.
19. Spraying calendar. By L. R. Taft and C. D. Smith. May, 1903.
20. Report of the Upper Peninsula substation for the years 1901 and 1902. By C. D. Smith and L. M. Geismar. Aug., 1903.
21. Cheese problems. By John Michels. Sept., 1903.
22. The crop of corn. By J. A. Jeffery. Jan., 1904.
23. A preliminary note on the associative action of bacteria in the souring of milk and in other milk fermentations. By C. E. Marshall. Jan. 1904.
24. Insects injurious to fruits in Michigan. By R. H. Pettit. Feb., 1904.
25. Fungous diseases of fruits in Michigan. By B. O. Longyear. Mar., 1904.
26. Spraying calendar. By L. R. Taft and C. D. Smith. Apr., 1904.
27. Report of South Haven substation for 1903. By T. A. Farrand. Apr., 1904.
28. Report of the Upper Peninsula substation for the year 1903. By L. M. Geismar and C. D. Smith. May, 1904.
29. Additional work upon the associative action of bacteria in the souring of milk and in other milk fermentations. By C. E. Marshall. May, 1904.
30. Report of South Haven substation for 1904. By T. A. Farrand. Apr., 1905.
31. Report of Upper Peninsula substation for 1904. By L. M. Geismar. Apr., 1905.
32. Investigation regarding succulence. By F. W. Robinson. May, 1905.
33. Extended studies of the associative action of bacteria in the souring of milk. By C. E. Marshall. June, 1905.
34. Corn improvement. J. A. Jeffery. Mar., 1906. See Spec. Bul. 47.
35. Report of the South Haven substation for 1905. By L. R. Taft and T. A. Farrand. Mar., 1906.
36. Spraying calendar. By L. R. Taft and C. D. Smith. Mar., 1907.
37. Spraying. By L. R. Taft. Apr., 1907.
38. Thrips on oats. By R. H. Pettit. July, 1907.
39. Pollination of forced tomatoes. By S. W. Fletcher and O. I. Gregg. Oct., 1907.
40. Report of the South Haven substation for 1906. By L. R. Taft and F. A. Wilken. Apr., 1907.
41. Report of the Upper Peninsula substation for the years 1905 and 1906. By L. M. Geismar. Apr., 1907.
42. Bacterial associations in the souring of milk. By C. E. Marshall and B. Ferrand. Mar., 1908.
43. The solvent action of soil bacteria upon the insoluble phosphates of raw bone meal and natural raw rock phosphate. By W. G. Sackett, A. J. Patten, and C. W. Brown. Mar., 1908.
44. Varieties of fruit originated in Michigan. By S. W. Fletcher. Aug., 1910.
45. Spraying calendar. By L. R. Taft and R. S. Shaw. May, 1908.
46. Report of the South Haven substation for 1907. By L. R. Taft and F. A. Wilken. May, 190
47. Corn improvement. (Revision of Spec. Bul. 34.) By J. A. Jeffery. Oct., 1908.
48. Report of South Haven substation for 1908. By L. R. Taft and F. A. Wilken. Feb., 1909.
49. Grape-spraying experiments in Michigan, 1907–8. By C. L. Shear and L. A. Hawkins. May, 1909.
50. Grand Traverse disease or Lake shore disease. By C. D. Smith and Ward Giltner. July, 1909.
51. Spray and practice outline for fruit growers. By H. J. Eustace and R. H. Pettit. Mar., 1910.
52. Corn production in the Upper Peninsula of Michigan. By L. M. Geismar. Apr., 1910.
53. Grasshoppers and their control. By L. M. Geismar. June, 1910.

54. Spray and practice outline for fruit growers, 1911. By H. J. Eustace and R. H. Pettit. Feb., 1911.
55. Analyses of miscellaneous materials. By A. J. Patten. June, 1911.
56. Tile drainage. By J. A. Jeffery. Jan., 1911.
57. Spray and practice outline for fruit growers, 1912. By H. J. Eustace and R. H. Pettit. Mar., 1912.
58. Foul brood. By R. H. Pettit. Apr., 1912. See Spec. Bul. 64.
59. Small fruit culture. By F. A. Wilkin. Mar., 1913.
60. Celery culture in Michigan. By C. P. Halligan. Mar., 1913.
61. Spray and practice outline for fruit growers, 1913. By H. J. Eustace and R. H. Pettit. Mar., 1913.
62. The tuberculin tests for tuberculosis in cattle. By E. T. Hallman. Sept., 1013.
63. Commercial peach growing in Michigan. By F. M. Barden and H. J. Eustace. Sept., 1913.
64. Foul brood. Supplement to Special Bulletin 58. F. E. Millen. Jan., 1914.
65. Hog cholera and preventive treatment. W. S. Robbins. Feb., 1914.
66. The potato diseases of Michigan. By G. H. Coons. Mar., 1914.
67. Onion culture on muck lands. By C. P. Halligan. Mar., 1914.
68. Two Michigan bean diseases. By J. H. Muncie. Mar., 1914.
69. Spray and practice outline for 1914. By H. J. Eustace and R. H. Pettit. Mar., 1914.
70. Michigan agriculture, its present status and wonderful possibilities. By R. S. Shaw. Apr., 1914.
71. Studies in the range of variation of the per cent of butter fat in the milk of individual cows. By A. C. Anderson. June, 1914.
72. Some ginseng troubles. By E. A. Bessey and J. A. McClintock. Feb., 1915.
73. Spray and practice outline for 1915. By H. J. Eustace and R. H. Pettit. Mar., 1915.
74. Analyses of some materials sold as insecticides and fungicides. By A. J. Patten and D. C. Kellogg. July, 1915.
75. Durability of concrete drain tile. By O. B. Winter and H. H. Musselman. Dec., 1915.
76. Transferring bees. By F. E. Millen. Dec., 1915.
77. The septoria leaf spot disease of celery or celery blight. By G. H. Coons and Ezra Levin. Mar., 1916. A popular edition of Tech. Bul. 53. Also a Dutch edition.
78. Christmas tree plantations. By A. K. Chittenden. Apr., 1916.
79. Michigan's shifting sands: Their control and better utilization. By F. H. Sanford. May, 1916.
80. Yellow rocket, a dangerous weed. By E. A. Bessey. May, 1917.
81. The leaf-spot disease of tomato. By G. H. Coons and Ezra Levin. June, 1917. A popular edition of Tech. Bul. 25.
82. Durability of concrete drain tile, II. By O. B. Winter. Dec., 1917.
83. Key to Orthoptera of Michigan with annotations. By R. H. Pettit and Eugenia McDaniel. Jan., 1918.
84. Strawberry culture. By C. P. Halligan. Feb., 1918.
85. Michigan potato diseases. By G. H. Coons. Mar., 1918.
86. Spray and practice outline for fruit growers. By C. P. Halligan and R. H. Pettit. Feb., 1918.
87. Dusting and spraying experiments with apples. By W. C. Dutton. Mar., 1918.
88. Spraying to control anthracnose [*Plectodiscella veneta*] on black raspberries. By W. C. Dutton. Mar., 1918.
89. Tomato growing in Michigan. By C. W. Waid.—[Insects. By R. H. Pettit.] Mar., 1918.
90. Special report of the Upper Peninsula experiment station: General information relating to the Upper Peninsula experiment station. By R. S. Shaw.—Report of the work of the Upper Peninsula station, including data for year ending June 30, 1918. By B. W. Householder. Oct., 1918.
91. Some general information on lime and its uses and functions in soils. By M. M. McCool and C. E. Millar. Dec., 1918.
92. Feeding value of skim milk for swine. By H. W. Norton, jr. Dec., 1918.
93. Spray and practice outline for fruit growers. By H. J. Eustace and R. H. Pettit. Feb., 1918. Supersedes Spec. Buls. 12, 15, 19, 26, 36, 45, 51, 54, 57, 61, 69, 73, 86.
94. The financial history of a twelve-year-old peach orchard. By H. J. Eustace and F. M. Barden. Feb., 1919.
95. Muskmelon culture in Michigan. By C. W. Waid. Feb., 1919.
96. Analyses of insecticides and fungicides. By A. J. Patten and E. F. Berger. May, 1919.
97. Alfalfa in Michigan. By J. F. Cox. June, 1919.
98. Vinegar. By Zae N. Wyant. Nov., 1919.
99. The Detroit commission plan of city milk administration. By W. O. Hedrick and A. C. Anderson. Nov., 1919.
100. Soy beans. By C. R. Megee. Mar., 1920.
101. Oats in Michigan. By J. F. Cox. Mar., 1920.
102. Dusting and spraying experiments of 1918 and 1919. By W. C. Dutton. Mar., 1920.
105 [i. e. 103]. Forest planting in Michigan. By A. K. Chittenden. Feb., 1921.
104. Soils of the Detroit area. By M. M. McCool and G. M. Grantham. Nov., 1920.

TECHNICAL BULLETINS.

1. Keeping qualities of butter: I, General studies. By W. S. Sayer, O. H. Rahn, and Bell Farrand June, 1908.
2. Keeping qualities of butter: II, The influence of salt; III, the decomposition of proteins. By Otto Rahn, C. W. Brown, and L. M. Smith. Sept., 1909.
3. Studies of agglutination reactions in hog cholera during the process of serum production. (Preliminary.) By Ward Giltner. Oct., 1909.
4. Organic nitrogenous compounds in peat soils. By S. L. Jodidi. Nov., 1909.
5. The usefulness of curves in the interpretation of microbial and biochemical processes. By Otto Rahn. June, 1910.
6. Lime-sulphur spray. By J. E. Harris. Jan., 1911.
7. Organic nitrogenous compounds in peat soils, II. By C. S. Robinson. April, 1911.
8. Studies of agglutination reactions in hog cholera during the processes of serum production. By Ward Giltner. June, 1911.
9. The influence of the products of lactic organisms upon *Bacillus typhosus*. By Zae Northrup. June, 1911.
10. The fermenting capacity of the average single cell of *Bacterium lactis acidi*. By Otto Rahn. June, 1911.
11. How contact insecticides kill, I [and] II. By G. D. Shafer. July, 1911.
12. Neutral ammonium citrate solution. By A. J. Patten and C. S. Robinson. June, 1912.
13. What is the antigen responsible for the anti-bodies in Dorset-Niles serum? By Ward Giltner. June, 1912.
14. Infectious abortion and sterility of cattle. By Ward Giltner. June, 1912.

15. The influence of certain acid-destroying yeasts upon lactic bacteria. By Zae Northrup. June, 1912.
16. The bacterial activity in soil as a function of grain-size and moisture content. By Otto Rahn. June, 1912.
17. An investigation of soil temperature and some of the most important factors influencing it. By G. J. Bouyoucos. Feb., 1913.
18. A bacterial disease of June beetle larvae, *Lachnosterna* spp. By Zae Northrup. June, 1914.
19. Soil acidity. By J. E. Harris. July, 1914.
20. Experiments on the control of the root-knot nematode. By J. A. McClintock. July, 1915.
21. How contact insecticides kill: III, Relating evidence, further, of certain properties of carbon disulphide, gasoline, and a few other fluids, as well as temperature and some dry powdered contact insecticides, by means of which the insecticidal action of these agents is accomplished after their absorption into the insect tissues, or after mere application; including also brief suggestions for possible practice. By G. D. Shafer. July, 1915.
22. Effect of temperature on some of the most important physical processes in soils. By G. J. Bouyoucos. July, 1915.
23. A simplified apparatus for measuring the conductivity of electrolytes. By R. P. Hibbard and C. W. Chapman. Nov., 1915.
24. The freezing point method as a new means of measuring the concentration of the soil solution directly in the soil. By G. J. Bouyoucos and M. M. McCool. Dec., 1915.
25. The leaf-spot disease of tomato. By Ezra Levin, E. A. Bessey, and G. H. Coons. Mar., 1916. See Spec. Bul. 81.
26. Soil temperature. By G. J. Bouyoucos. Jan., 1916.
27. The freezing point method as a new means of determining the nature of acidity and lime requirements of soils. By G. J. Bouyoucos. Mar., 1916.
28. The soil solution obtained by the oil-pressure method. By J. F. Morgan. Oct., 1916.
29. Keeping qualities of butter: IV, Cream ripening and its influence (contribution), bacteria in cream, their numbers and types and their itinerary in the manufacture of butter. By C. W. Brown and Kurt Peiser. Oct., 1916.
30. Keeping qualities of butter: V, Pasteurization and its influence (contribution), a study of the factors which influence the resistance of lactic acid bacteria to heat. By C. W. Brown and Kurt Peiser. Oct., 1916.
31. Further studies on the freezing point lowering of soils. By G. J. Bouyoucos and M. M. McCool. Nov., 1916.
32. The transmission of *Bacterium abortus* (Bang) to new-born calves through the ingestion of milk. By I. F. Huddelson. Oct., 1916.
33. A study of the presence of *Bacterium abortus* (Bang) in milk. By L. H. Cooledge. Oct., 1916.
34. A study of the factors which govern mating in the honey bee. By G. D. Shafer. July, 1917.
35. Organic nitrogenous compounds in peat soils, III. By C. S. Robinson and E. J. Miller. Aug., 1917.
36. Classification and measurement of the different forms of water in the soil by means of the dilatometer method. By G. J. Bouyoucos. Sept., 1917.
37. The freezing point method as a new means of studying velocity of reaction between soils and chemical agents and behavior of equilibrium. By G. J. Bouyoucos and W. A. Laudeman. Sept., 1917.
38. Experiments on the control of bean anthracnose and bean blight. By J. H. Muncie. Dec., 1917.
39. Soil solution as an index of the biological changes in the soil. By J. F. Morgan. Sept., 1917.
40. Physiological balance in the soil solution. By R. P. Hibbard. Sept., 1917.
41. Studies upon the bacterial flora of samples of milk with high cellular counts as drawn from apparently normal udders. By L. H. Cooledge. Jan., 1918.
42. Relationship between the unfree water and the heat of wetting of soils and its significance. By G. J. Bouyoucos. Mar., 1918.
43. Soluble salt content of soils and some factors affecting it. By M. M. McCool and C. E. Millar. Nov., 1918.
44. Rate and extent of solubility of soils under different treatments and conditions. By G. J. Bouyoucos. June, 1919.
45. The effect of fertilizer salts treatments on the composition of soil extracts. By C. H. Spurway. Aug., 1919.
46. The use of solutions of ammonium citrate for the estimation of reverted calcium phosphate. By C. S. Robinson. Oct., 1919.
47. Studies in the heat resistant organisms of cold-packed canned peas. By Ruth Normington, under the direction of Ward Giltner and Zae N. Wyant. Nov., 1919.
48. The Lecania of Michigan. By R. H. Pettit and Eugenia McDaniel. Mar., 1920.
49. Studies in infectious abortion: 1, On the presence *Bacterium abortus* in the deeper of layers of the mucous membrane of the nongravid uterus; 2, a few notes on the isolation and cultivation of *Bacterium abortus* with special reference to liver and spleen media; 3, on the possibility of differentiating between infected and immune animals in infectious abortion. By H. J. Stafseth.—4, The isolation of *Bacterium abortus* from milk. By I. F. Huddelson. Nov., 1920.

MINNESOTA.

Agricultural Experiment Station of the University of Minnesota, University Farm, St. Paul.

BULLETINS.

1. Reports on Russian apples; wheat experiments and potato culture. By E. D. Porter. Jan., 1888.
2. Silos and ensilage; tests of varieties of corn for feeding values; examination of beets and other roots for sugar and feeding value. By E. D. Porter and J. A. Dodge. Apr., 1888.
3. Our Russian apples at the opening of their fourth season; natural and artificial fertilization of plants. By S. B. Green.—Report on Rocky Mountain locusts in Otter Tail County, Minn., in 1888. By Otto Lugger. July, 1888.
4. Comparative value of cold and warm water for stock in food consumed and in the production of milk, butter, and beef. By E. D. Porter.—Fungi which kill insects, especially as affecting chinch bugs and locusts. By Otto Lugger.—"Tuberculosis" or consumption in domestic animals. By M. J. Treacy. Oct., 1888.
5. Indian corn: Habits of root growth; methods of planting and cultivation; notes on ears and suckers. By W. M. Hays.—Propagation of Russian willows and poplars from hardwood cuttings; native plums; comparative tests of varieties of cabbage. By S. B. Green.—New method of potato culture. By Charles Poumeroulie.—Frosted and rusted wheat. By Otto Lugger. Jan., 1889.
6. Experiments with frosted, rusted, and stack burned wheat: Notes on the effects of frost and rust on the germination of wheat. By E. D. Porter.—Experiments in germination and growth of damaged wheat and barley. By S. B. Green. Feb., 1889.

7. Soil temperatures; comparative tests of varieties of corn for ensilage; warm and cold water for stock. By E. D. Porter.—Selection and cross fertilization of corn. By W. M. Hays.—Washing and salting butter. By W. M. Hays and D. N. Harper.—Construction of green-house walls; comparative tests of varieties of potatoes. By S. B. Green.—The chemistry of wheat under various conditions. By D. N. Harper.—Influence of food upon the formation of the skull and teeth of pigs. By Olaf Schwartzkopf. Apr., 1889.
8. Siloing clover. By N. W. McLain.—Sources of homemade manures. By W. M. Hays.—The by-products of wheat. By W. M. Hays and D. N. Harper.—The Rocky Mountain locust in Otter Tail County, Minn., in 1889. July, 1889.
9. Russian willows and poplars—descriptions and value for Minnesota. By S. B. Green.—Insects affecting poplars and willows. By Otto Lugger. Nov., 1889.
10. Onions on land plowed and unplowed; trial of cabbage; syringing with London purple to kill the curculio on our native plums; bagging grapes; rolling-stone plums; potatoes at different depths. By S. B. Green.—Oak caterpillars. By Otto Lugger. Mar., 1890.
11. Pruning the roots of corn: Deep versus shallow cultivation; improving corn: Cross fertilization and selection; peas, beans, flax, and other crops. By W. M. Hays.—Results of seeding rusted, frosted, and frozen wheat of 1888: Further observations. By D. N. Harper. June, 1890.
12. Meadows and pastures in Minnesota. By W. M. Hays.—American-grown cauliflower seed; preserving vegetables in carbonic acid gas. By S. B. Green.—Protection from frost. By H. A. Hazen. July, 1890.
13. A treatise on flax culture. By Otto Lugger and H. L. Osborn. Dec., 1890.
14. Swine feeding for profit; swine breeding. By N. W. McLain.—Sugar beets: Their cultivation, the process of manufacture, etc. By D. N. Harper and W. M. Hays. Jan., 1891.
15. Wheat: A comparison of foreign and native varieties, the selection and changing of seed, etc. By D. N. Harper. Feb., 1891.
16. Sheep scab and how to cure it. By Otto Lugger. Apr., 1891.
17. Migratory locusts in Minnesota in 1891. By Otto Lugger. Aug., 1891.
18. Notes on strawberries and raspberries, 1891; notes on sand cherries, buffalo berry, and Russian mulberry; evergreens from seed; summer propagation of hardy plants. By S. B. Green. Sept., 1891.
19. Dehorning experiment. By C. D. Smith and T. L. Haecker.—[A double monstrosity of a calf traceable to injury of its mother. By Olaf Schwarzkopf.]—Cream raising by cold deep setting; experiments in cheese making. By Harry Snyder.—The Babcock test and churn. By C. D. Smith and T. L. Haecker. Mar., 1892.
20. Fertilizers. By W. M. Hays and D. N. Harper.—Improvement of timothy; rape in Minnesota; peas and oats; field peas. By W. M. Hays. May, 1892.
21. Sugar beets. By D. N. Harper and W. M. Hays.—Sorghum. By D. N. Harper. June, 1892.
22. Comparison of corn, barley, corn and shorts, barley and shorts, corn, shorts and oil meal, and barley, shorts and oil meal in the ration of growing pigs. By C. D. Smith.—Corn vs. barley for fattening hogs; corn meal, barley meal, and a mixture of barley meal and oil meal compared. By W. M. Hays.—Wet vs. dry feed. By C. D. Smith. Aug., 1892.
23. Wheat: Milling and baking tests. By D. N. Harper. Cooperative tests with selected seed wheat. By D. N. Harper, A. C. Clausen, and T. C. Hodson.—The frit fly—preliminary report upon an insect injurious to wheat. By Otto Lugger. Sept., 1892.
24. Ornamental and timber trees, shrubs, and herbaceous plants in Minnesota. By S. B. Green. Oct., 1892. See 96.
25. Report on small fruit; notes from trial stations; notes on renewing old strawberry beds; shading strawberry beds; seedling fruits; analyses of grapes; spraying grapevines. [By S. B. Green and others.] Dec., 1892.
26. Digestion experiments: Milch cows; pigs. By Harry Snyder. Jan., 1893.
27. The composition of fodders, wheat, and milled products; the composition of dairy products; sugar beets. By Harry Snyder. Feb., 1893.
28. The classification of insects and their relation to agriculture. By Otto Lugger. Mar., 1893.
29. Wheat: Heavy and light weight seed wheat; the vigor of growth of the wheat plant; the draft of the wheat plant upon the soil in different stages of its growth. By Harry Snyder. Dec., 1893.
30. Soils: The composition of native and cultivated soils and the effects of continuous cultivation upon their fertility. By Harry Snyder. Dec., 1893.
31. Lambs, practical rations for; also lambs versus wethers for fattening. By W. M. Hays.—Field experiments in 1893. By Andrew Boss. Dec., 1893.
32. Late blight and rot of the potato; potato scab; cross fertilization of grapes; conservation of moisture in the soil; fruits, notes on varieties. By S. B. Green. Dec., 1893.
33. The Russian thistle or Russian tumbleweed. By W. M. Hays. July, 1894.
34. The chemical development and value of red clover; the Russian thistle, its food value and draft upon the soil. By Harry Snyder. Sept., 1894.
35. Dairy herd record for 1893; cost of butter production in winter; comparing prairie hay with timothy; rearing dairy calves; cooperative creameries; experiments in sweet-curd cheese. By T. L. Haecker. Oct., 1894.
36. Miscellaneous analyses of feeding stuffs; the digestibility of wheat. By Harry Snyder. Nov., 1894.
37. The chinch-bug. By Otto Lugger. Dec., 1894.
38. Garden tillage and implements. By S. B. Green. Dec., 1894.
39. Potatoes (variety tests, potato scab, blight, and internal brown rot); tomatoes (variety tests, training); strawberries (variety tests); apple-tree sun scald; raspberries (variety tests, cane rust). By S. B. Green. Dec., 1894.
40. Grain and forage crops. By W. M. Hays. Dec., 1894.
41. Soils: The essential elements of soil fertility; humus as a factor of soil fertility; the chemical and mechanical analyses of soils; the action of organic and mineral acids upon soils; comparison of different methods of farming upon the conservation of soil fertility. By Harry Snyder. Aug., 1895.
42. The composition, digestibility, and food value of potatoes. By Harry Snyder. Dec., 1895.
43. Insects injurious in 1895. By Otto Lugger. Dec., 1895.
44. Fattening steers in winter; fattening lambs in winter. By Thomas Shaw. Dec., 1895.
45. Potatoes (variety tests, treatment for potato scab and blight, internal brown rot); tomatoes (variety tests, treatment for rot); small fruits (variety tests); spray pumps (new form of and strainer for). By S. B. Green. Dec., 1895.
46. Forage and grain crops; cross rotation experiments; smut in wheat; three annual weeds; tillage experiments. By W. M. Hays.—Meteorological records. By E. A. Beals. Dec., 1895.
47. Flax: The draft of flax on the soil, and the composition of flax soils; the feeding value of flax products. By Harry Snyder. July, 1896.
48. Insects injurious in 1896. By Otto Lugger. Dec., 1896.
49. Rate of increase on the cut-over timber lands of Minnesota. By S. B. Green and A. B. Ayres. Dec., 1896.

50. Progress at the several experiment farms in 1896; beans—barley—corn—oats—wheat—variety tests; wheat, smallest versus largest versus hardest kernels for seed; rotation of crops; cross rotation experiments; root crops (variety tests). By W. M. Hays [and others]. Dec., 1896.
51. Bovine tuberculosis. By M. H. Reynolds. Dec., 1896.
52. Potatoes, variety tests in 1896; potato implements. By S. B. Green. Dec., 1896.
53. Effects of the rotation of crops upon the humus content and the fertility of soils; production of humus from manures. By Harry Snyder. June, 1897.
54. Human food investigations; the gluten of wheat; the digestibility and composition of bread; the loss of food value by prolonged fermentation in bread making; the digestibility of potatoes, and the loss of food value when potatoes, carrots, and cabbages are boiled in different ways; the rational feeding of men. By Harry Snyder. Sept., 1897.
55. Grasshoppers, locusts, crickets, cockroaches, etc. [Orthoptera], of Minnesota. By Otto Lugger. Dec., 1897.
56. Sugar beets: Summary of investigations from 1888 to 1898; report for 1897; proposed experiments for 1898. By Harry Snyder, Andrew Boss, and W. M. Liggett. Apr., 1898.
57. Fattening lambs in winter. By Thomas Shaw. June, 1898.
58. Fattening steers in winter. By Thomas Shaw. June, 1898.
59. Fattening lambs and wethers in winter. By Thomas Shaw. July, 1898.
60. Beef cattle and swine. By Thomas Shaw. July, 1898.
61. Butterflies and moths injurious to our fruit-producing plants. By Otto Lugger. Dec., 1898.
62. Wheat: Varieties, breeding, and cultivation. By W. M. Hays and Andrew Boss. Mar., 1899.
63. Miscellaneous analyses; composition of tomatoes; proteids of wheat flour. By Harry Snyder. July, 1899.
64. The black rust or summer rust; the Hessian fly, migratory locusts, or grasshoppers. By Otto Lugger. Oct., 1899.
65. Soil investigations: The chemical composition of soils; the mechanical composition of soils; the available plant food of soils; characteristic features of Minnesota soils and conservation of the fertility of the soil. By Harry Snyder. Nov., 1899.
66. Beetles (Coleoptera) injurious to fruit-producing plants. By Otto Lugger. Dec., 1899.
67. Investigation in milk production; feeding dairy cows. By T. L. Haecker. Apr., 1900.
68. Subexperiment farms: Experiments at Coteau farm. By W. M. Hays and W. G. Smith.—Report of progress of work at the Northwest Experiment Farm. By T. A. Hoverstad.—Report of progress of work at the Northeast Experiment Farm. By H. H. Chapman. June, 1900.
69. Bugs (Hemiptera) injurious to our cultivated plants. By Otto Lugger. Dec., 1900.
70. Influence of wheat farming upon soil fertility. By Harry Snyder. May, 1901.
71. Investigation in milk production: [Protein requirements.] By T. L. Haecker and E. W. Major June, 1901.
72. Prairie forestry and horticulture at Coteau Farm. By S. B. Green. June, 1901.
73. Growing swine of various breeds and crosses. By Thomas Shaw. Mar., 1902.
74. Human food investigations: The digestibility and food value of beans, cheese, butter, oatmeal, graham, entire wheat, and patent grade flours and bread and toast; influence of the enzymes or chemical ferments of milk upon the digestibility of foods. By Harry Snyder. Apr., 1902.
75. Fattening lambs. By Thomas Shaw. May, 1902.
76. Fattening steers. By Thomas Shaw. June, 1902.
77. Insects notably injurious in 1902. [By F. L. Washburn.] Nov., 1902.
78. Experiments in sheep husbandry. By Thomas Shaw. Jan., 1903.
79. Investigation in milk production: The food of maintenance; nutrient requirements; protein requirements; influence of stage of lactation on nutrient requirements. By T. L. Haecker. Jan., 1903.
80. Alfalfa, its chemical development, feeding value, and digestibility; the digestibility of hog millet. By Harry Snyder and J. A. Hummel. Mar., 1903.
81. Review of the work of the Northeast Experiment Farm since its organization in May, 1896. By H. H. Chapman. Mar., 1903.
82. Haemorrhagic septicaemia. [By M. H. Reynolds.] June, 1903.
83. Apples and apple growing in Minnesota. By S. B. Green. July, 1903.
84. Injurious insects of 1903. By F. L. Washburn. Dec., 1903.
85. Wheat and flour investigations. By Harry Snyder. Jan., 1904.
86. The food value of sugar; the digestive action of milk. By Harry Snyder. Mar., 1904.
87. Potatoes at University Farm. By S. B. Green and Harold Cuzner. Nov., 1904.
88. Injurious insects of 1904. By F. L. Washburn. Dec., 1904.
89. Soil investigations: The influence of crop rotations and use of farm manure upon the humus content and fertility of soils; the water soluble plant food of soils; the production of humus in soils. By Harry Snyder and J. A. Hummel. Jan., 1905.
90. Heavy and light weight grains; starchy and glutenous grains; light and dark colored flax seed; rusted wheat; milling tests of wheat. By Harry Snyder. Jan., 1905.
91. Poultry culture in Minnesota. By C. S. Greene. Oct., 1904.
92. The digestibility and nutritive value of cottage cheese, rice, peas, and bacon. By Harry Snyder. May, 1905.
93. [A brief outline of insect conditions and work of the year, 1905]. Diptera of Minnesota: Two-winged flies affecting the farm, garden, stock, and household. By F. L. Washburn. Dec., 1905.
94. Soil investigations: Fertilizer tests with wheat and corn; the loss of nitrogen from soils. By Harry Snyder. Feb., 1906.
95. Some common weeds and their eradication. By A. D. Wilson. Mar., 1906. See 129.
96. Ornamental trees, shrubs, and herbaceous plants in Minnesota. By S. B. Green. Apr., 1906. A revision of 24.
97. The cost of producing farm products. By W. M. Hays and E. C. Parker. Oct., 1906.
98. Stable ventilation: Purpose, scope and need for such work. By M. H. Reynolds and C. C. Lipp. Nov., 1906.
99. The calculated and determined nutrients of rations. By J. A. Hummel.—The digestibility and value of emmer. By J. A. Hummel. The heat-producing value of the crude fat of fodders and grains. By Harry Snyder. Dec., 1906.
100. The cabbage maggot and other injurious insects of 1906. By F. L. Washburn. Dec., 1906.
101. Forage crops of high, medium, and low protein content. By Harry Snyder. Jan., 1907.
102. Soil investigations: Fertilizer tests with wheat and corn; influence of fertilizers upon the composition and quality of wheat; a comparison of chemical methods and field tests for determining the fertilizer requirements of soils. By Harry Snyder. Sept., 1907.
103. Dissemination of tuberculosis by the manure of infected cattle. By M. H. Reynolds and W. L. Beebe. Oct., 1907.
104. Pork production. By D. A. Gaumnitz, A. D. Wilson, and L. B. Bassett. Nov., 1907.

105. The importance of the study of entomology; how to collect and preserve insects. By F. L. Washburn. Feb., 1908.
106. Investigation in milk production: The relation of nutriment to product. By T. L. Haecker. Nov., 1907.
107. Corn breeding in Minnesota. By C. P. Bull.—Fourteen years' experience. By H. P. Hanson. Mar., 1908.
108. The so-called "green bug" and other grain aphids in Minnesota in 1907. By F. L. Washburn. Apr., 1908.
109. The rotation of crops: Report of 10 years on 44 rotation plots. By W. M. Hays, Andrew Boss, and A. D. Wilson.—Influence of rotation of crops and continuous cultivation upon the composition and fertility of soils. By Harry Snyder. June, 1908.
110. Installation of an experimental drainage system. By William Robertson and J. T. Stewart. July, 1908.
111. Flour bleaching. By Harry Snyder. Aug., 1908.
112. Two years' work with the apple leaf hopper and with the cabbage maggot; other injurious insects of 1907 and 1908. By F. L. Washburn. Dec., 1908.
113. Hog cholera and hog-cholera vaccine. By M. H. Reynolds. Dec., 1908.
114. Potato experiments and studies at University Farm; potato growing for Minnesota. Mar., 1909.
115. Seed grain: Selection, treatment, varieties, distribution. By Andrew Boss, C. P. Bull, L. B. Bassett, and T. P. Cooper. Apr., 1909.
116. Report of the Northeast Experiment Farm at Grand Rapids. By A. J. McGuire. May, 1909.
117. The cost of producing Minnesota farm products, 1902–1907. By E. C. Parker and T. P. Cooper. Apr., 1910.
118. Potato experiments and studies at University Farm in 1909. By A. R. Kohler. Apr., 1910.
119. Poultry at the Northwest Experiment Farm at Crookston, Minn. By C. E. Brown. May, 1909.
120. Rye growing in Minnesota. By Andrew Boss. July, 1910.
121. Orchard and garden spraying. By A. G. Ruggles and E. C. Stakman. Mar., 1911.
122. The smuts of grain crops. By E. M. Freeman and E. C. Stakman. Feb., 1911. Revised reprint, Feb., 1914.
123. Cutworms, army worms, and grasshoppers. By F. L. Washburn. May, 1911.
124. The cost of Minnesota dairy products. By T. P. Cooper. June, 1911.
125. Farm management: Organization of research and teaching. By W. M. Hays [and others]. Mar., 1912.
126. Lighting with alcohol and kerosene. By R. M. West. Mar., 1912.
127. Seed laboratory report for 1910 and 1911. By W. L. Oswald and E. M. Freeman. Apr., 1912.
128. The relation of different systems of crop rotation to humus and associated plant food. By G. W. Walker. Apr., 1912.
129. Minnesota weeds, Series I: Descriptions and identifications, by W. L. Oswald; and eradication, by Andrew Boss. Mar., 1913.
130. Feeding dairy cows. By T. L. Haecker. May, 1913. Revised reprint, Feb., 1914.
131. Minnesota wheat investigations: Series I, Milling, baking, and chemical tests, crop of 1911. By C. H. Bailey. Apr., 1913.
132. Studies in egg-marketing. By C. W. Thompson. Apr., 1913.
133. Spore germinations of cereal smuts. By E. C. Stakman, July, 1913.
134. Land clearing. By A. J. McGuire. Apr., 1913.
135. Woodworking exercises for the agricultural school shop. By H. B. White. July, 1913.
136. Rope and its use on the farm. By J. B. Frear. Dec., 1913.
137. Minnesota wheat investigations: Series II, Marquis wheat: 1, History and culture. By A. C. Arny.—2, Milling quality. By C. H. Bailey. Feb., 1914.
138. A study in cereal rusts: Physiological races. By E. C. Stakman. Feb., 1914.
139. Minnesota weeds, Series II: Descriptions and identifications, by W. L. Oswald; and eradication, by Andrew Boss. May, 1914.
140. Investigations in milk production. By T. L. Haecker. July, 1914.
141. The Acrididae of Minnesota. By M. P. Somes. July, 1914.
142. Selection and preparation of land for cranberry culture. By C. L. Lewis. July, 1914.
143. Minnesota wheat investigation: Series III, Composition and quality of spring and winter wheats, crops of 1912 and 1913. By C. H. Bailey. Sept., 1914.
144. Pollen development in the grape with special reference to sterility. By M. J. Dorsey. Sept., 1914.
145. The cost of producing Minnesota farm products, 1908–1912: Field crops. By F. W. Peck. Dec., 1914.
146. Statistics of cooperation among farmers in Minnesota, 1913. By L. D. H. Weld. Dec., 1914.
147. First annual seed laboratory report, 1913–14. By W. L. Oswald. Jan., 1915.
148. Barley investigations. By C. P. Bull. Apr., 1915.
149. Corn: Relation of Cultivation to yield and character of crop; relation of number of stalks per hill to to yield. By C. P. Bull. June, 1915.
150. Tobacco-growing in Minnesota. By C. P. Bull. July, 1915.
151. Quack grass eradication: Experimental evidence and conclusions; tabulated statement of operations on the fields under rotation. By A. C. Arny. July, 1915.
152. Farmers' elevators in Minnesota. By L. D. H. Weld. Aug., 1915.
153. Fruit and vegetable diseases and their control. By E. C. Stakman and A. G. Tolaas. Jan., 1916.
154. The cost of producing sugar beets. By F. W. Peck. Feb., 1916.
155. Investigation in animal nutrition: Beef production. T. L. Haecker. Mar., 1916.
156. Cooperative live-stock shipping associations in Minnesota. By E. D. Durand. Feb., 1916.
157. Labor requirements of crop production. By T. P. Cooper, F. W. Peck, and Andrew Boss. Mar., 1916.
158. Potato disease and their control. By E. C. Stakman and A. G. Tolaas. Feb., 1916. See 190.
159. Second annual seed laboratory report, 1914–15. By W. L. Oswald. Mar., 1916.
160. Rye smut. By E. C. Stakman and M. N. Levine. Aug., 1916.
161. Labor requirements of live stock. By Andrew Boss, F. W. Peck, and T. P. Cooper. Aug., 1916.
162. The cost of living on Minnesota farms, 1905–1914. By F. W. Peck. Aug., 1916.
163. Investigations in cost and methods of clearing land. By M. J. Thompson. Sept., 1916. See 189.
164. Farmers' elevators in Minnesota, 1914–15. By E. D. Durand and J. P. Jensen. Oct., 1916.
165. Third annual seed laboratory report, 1915–16. By W. L. Oswald. Mar., 1917.
166. Cooperative creameries and cheese factories in Minnesota, 1914. By E. D. Durand and Frank Robotka. Mar., 1917.
167. Cooperative buying by farmers' clubs in Minnesota. By E. D. Durand and H. B. Price. June, 1917.
168. Preliminary study of white spruce in Minnesota. By W. H. Kenety. June, 1917.
169. Report of Cloquet Forest Experiment Station. By W. H. Kenety. Oct., 1917.
170. Crop rotation investigations: Field T experiments. By A. C. Arny. Oct., 1917.
171. Cooperative stores in Minnesota, 1914. By E. D. Durand and Frank Robotka. Oct., 1917.

172. A farm management study in southeastern Minnesota: Factors influencing profits. By Andrew Boss, A. H. Benton, and W. L. Calvert. Oct., 1917.
173. The cost of milk production: I, Factors of cost; II, application of the factors in determining the cost of milk at Northfield, Halsted, and Cokato, By F. W. Peck and Andrew Boss. Feb., 1918.
174. Ear type selection and yield in corn. By P. J. Olson, C. P. Bull, and H. K. Hayes. Feb., 1918.
175. Fourth annual seed laboratory report 1916-17. By R. C. Dahlberg and W. L. Oswald. July, 1918.
176. Minnesota weeds: Series III, Descriptions and identifications. By W. L. Oswald.—Eradication by Andrew Boss. July, 1918.
177. Butterfat losses in creameries. By R. M. Washburn, A. C. Dahlberg, James Sorenson, and M. P. Mortensen. Sept., 1918.
178. Farm tenancy and leases. By A. H. Benton. Dec., 1918.
179. The cost of producing Minnesota field crops, 1913-1917. By F. W. Peck. Nov., 1918.
180. Experiences of northern Minnesota settlers. By F. W. Peck. Dec., 1918.
181. Studies on Fusarium diseases of potatoes and truck crops in Minnesota. By G. R. Bisby. Mar., 1919.
182. Breeding small grains in Minnesota: Technic and results with wheat and oats. By H. K. Hayes and R. J. Garber.—Barley investigations. By H. V. Harlan and H. K. Hayes. Mar., 1919.
183. First generation crosses between standard Minnesota corn varieties. By H. K. Hayes and P. J. Olson. Aug., 1919.
184. Farmers' cooperation in Minnesota, 1913-1917. By J. D. Black and Frank Robotka. Aug., 1919.
185. Cider and vinegar making qualities of Minnesota apples. By W. G. Brierly. Aug., 1919.
186. Cockroach pests in Minnesota with special reference to the German cockroach. By V. R. Haber. Aug., 1919.
187. Sorghum and sorghum sirup manufacture. By J. J. Willaman, R. M. West, and C. P. Bull. Sept., 1919.
188. Agricultural value and reclamation of Minnesota peat soils. By F. J. Alway. Mar., 1920.
189. Forced vs. delayed systems of clearing stump land. Supplement to Bulletin 163. By M. J. Thompson. May, 1920.
190. Potato diseases in Minnesota. By G. R. Bisby and A. G. Tolaas. June, 1920. A revision of 158.
191. A Helminthosporium disease of wheat and rye. By Louise J. Stakman. July, 1920.
192. The use of Bordeaux mixture for spraying potatoes. By G. R. Bisby and A. G. Tolaas. June, 1920.
193. Investigations in beef production: The composition of steers at the various stages of growth and fattening; the relation of feed nutriments consumed to substance stored in the body during various stages of growth and fattening; nutrient requirements for beef production based upon digestible nutrients. By T. L. Haecker. Sept., 1920.
194. Report of the Golden Valley peat experimental fields, 1918 and 1919. By F. J. Alway. Nov., 1920.

MISSISSIPPI.

Mississippi Agricultural Experiment Station, Agricultural College.

BULLETINS.

1. Organization. By S. M. Tracy. Mar. 21, 1888.
2. Cotton worm (*Aletia argillacea*). By S. M. Tracy. May 20, 1888.
3. Analyses of commercial fertilizers sold in Mississippi during the season 1887-88. By J. A. Myers. June 20, 1888.
4. The marls of Mississippi. By W. L. Hutchinson. Nov. 7, 1888.
5. Fertilizers. By S. M. Tracy. May 20, 1889.
6. Charbon. By S. M. Tracy. June 25, 1889.
7. Hay presses. By S. M. Tracy. June 20, 1889.
8. Stock feeding. By B. Irby. Aug. 30, 1889.
9. Some entozoic diseases of sheep and calves; bitterweed [*Helenium autumnale*]. By D. L. Phares. Aug. 30, 1889.
10. Dishorning. By D. L. Phares. Oct. 10, 1889.
11. Charbon (*Bacillus anthracis*). By G. C. Creelman. Feb. 15, 1890.
12. Cotton leaf worm (*Aletia argillacea*). By S. M. Tracy. June 25, 1890.
13. Feeding for milk and butter. By E. R. Lloyd. Sept. 25, 1890.
14. Injurious insects. By H. E. Weed. Mar., 1891.
15. Feeding. By E. R. Lloyd.—Milk-testing apparatus. By L. G. Patterson. June, 1891.
16. Glanders. By Tait Butler. Sept., 1891.
17. Insects injurious to stored grain. By H. E. Weed. Dec., 1891. Second edition, Oct., 1894.
18. Varieties of cotton. By E. R. Lloyd. Jan., 1892.
19. The southern tomato blight. By B. D. Halsted. Jan., 1892. Includes an article on bacterial melon blight which was also published in Bot. Gaz., 16 (1891), No. 11, p. 303-305.
20. Grasses and forage plants. By S. M. Tracy. Feb., 1892. Second edition, Feb., 1893.
21. Insects injurious to the cabbage. By H. E. Weed.—A new method for testing milk. By L. G. Patterson.—Feeding for milk and butter. By E. R. Lloyd. June, 1892.
22. Grapes. By S. M. Tracy and F. S. Earle. Sept., 1892.
23. Varieties of cotton, 1892. By E. R. Lloyd. Feb., 1893.
24. Fertilizers for cotton. By W. L. Hutchinson and L. G. Patterson. Feb., 1893.
25. Colic in horses and mules. By Tait Butler. June, 1893.
26. Small fruits. By A. B. McKay. Aug., 1893.
27. Insecticides and their application. By H. E. Weed. Nov., 1893.
28. The horn-fly. By H. E. Weed. Jan., 1894.
29. Exhaustion and restoration of soil fertility. By W. L. Hutchinson.—Fertilizers and their use. By S. M. Tracy. May, 1894.
30. A kerosene attachment for knapsack pumps. By H. E. Weed. May, 1894.
31. Lameness in horses and mules. By Tait Butler. Sept., 1894.
32. A new kerosene attachment for knapsack sprayers. By H. E. Weed. Dec., 1894.
33. Corn. By S. M. Tracy and E. R. Lloyd. Mar., 1895.
34. Mississippi fungi. By S. M. Tracy and F. S. Earle. May, 1895. See 38.
35. Hog raising. By Tait Butler. Sept., 1895.
36. Insects injurious to corn. By H. E. Weed. Nov., 1895.
37. Fruits and vegetables on the Gulf Coast: Report of the Ocean Springs Branch Station. By F. S. Earle. Mar., 1896.
38. Mississippi fungi. By S. M. Tracy and F. S. Earle. May, 1896. A continuation of 34.
39. Feeding for beef. By E. R. Lloyd and J. S. Moore. Aug., 1896.
40. The cowpea. By S. M. Tracy and E. R. Lloyd. Dec., 1896.
41. The Colorado pototo beetle in Mississippi. By H. E. Weed. Mar., 1897.
42. Acclimation fever, or Texas fever. By J. C. Robert. Nov., 1897.

42. Analyses of commercial fertilizers on sale in the State. By B. W. Kilgore [and others]. Jan., 1898.
43. "Natural Plant Food," claims made for it and its value. By B. W. Kilgore. Feb., 1898.
44. Winter pasture. By E. R. Lloyd. Jan., 1898.
45. Analyses of commercial fertilizers on sale in the State. By B. W. Kilgore [and others]. Feb., 1898.
46. Cooperative experiments with small fruit. By D. T. Price. Mar., 1898.
47. Analyses of commercial fertilizers on sale in the State. By B. W. Kilgore [and others]. Mar., 1898.
48. Analyses of commercial fertilizers. By B. W. Kilgore. May, 1898.
49. Analyses of commercial fertilizers on sale in the State, season 1897–98. By B. W. Kilgore [and others]. June, 1898.
50. Winter and summer pasture in Mississippi. By E. R. Lloyd. Sept., 1898.
51. Analyses of commercial fertilizers on sale in the State. By B. W. Kilgore [and others]. Jan., 1899.
52. Analyses of commercial fertilizers on sale in the State. By B. W. Kilgore [and others]. Feb., 1899.
53. Some insects injurious to stock and remedies therefor. By G. W. Herrick. Mar., 1899.
54. Irish pototo culture. By A. B. McKay. Mar., 1899.
55. Analyses of commercial fertillzers on sale in the State. By B. W. Kilgore [and others]. Mar., 1899.
56. Grapes. By J. S. Moore. Apr., 1899.
57. Analyses of commercial fertilizers. By B. W. Kilgore. Apr., 1899.
58. Soils of Mississippi: Texture and water conditions. By W. L. Hutchinson. May, 1899.
59. Analyses of commercial fertilizers on sale in the State. By B. W. Kilgore [and others]. June, 1899.
60. Value of cotton seed to the farmer. By W. L. Hutchinson [and others]. Sept., 1899.
61. Analyses of commercial fertilizers on sale in the State. By W. F. Hand [and others]. Jan., 1900.
62. Varieties of cotton. By E. R. Lloyd. Apr., 1900.
63. Inoculation of soils. By G. W. Herrick. June, 1900.
64. Analyses of commercial fertilizers on sale in the State. By W. F. Hand [and others]. Aug., 1900.
65. Soils of Mississippi: Chemical and physical composition. By W. L. Hutchinson, W. R. Perkins, and E. B. Ferris. June, 1900.
66. Soils of Missisippi: Plant food and productiveness. By W. L. Hutchinson. Feb., 1901.
67. Good dirt roads for Mississippi. By J. W. Fox and W. L. Hutchinson. Apr., 1901.
68. Analyses of commercial fertilizers on sale in the State. By W. F. Hand [and others]. Sept., 1901.
69. Texas fever. By J. C. Robert. Nov., 1901.
70. Records of station cows; feeding dairy cows. By J. S. Moore. Dec., 1901.
71. Milk fever. By J. C. Robert. Jan., 1902.
72. Anthrax. By J. C. Robert. Jan., 1902.
73. Tick fever, or murrain, in southern cattle. By J. C. Robert. July, 1902.
74. Some mosquitoes of Mississippi and how to deal with them. By G. W. Herrick. Nov., 1901.
75. Strawberry culture in Mississippi. By A. B. McKay. Jan., 1902.
76. Beef cattle. By W. L. Hutchinson and E. R. Lloyd. July, 1902.
77. Analyses of commercial fertilizers on sale in the State. By W. L. Hutchinson. Sept., 1902.
78. The chicken mite. By G. W. Herrick Nov., 1902.
79. Report of work at McNeill Branch Station for 1902. By E. B. Ferris. Jan., 1903.
80. Farmers' institute bulletin, 1902. Mar., 1903.
81. The Colorado potato beetle. By G. W. Herrick. June, 1903.
82. Inspection and analyses of commercial fertilizers on sale in the State. By W. F. Hand [and others] Sept., 1903.
83. Report of work at McNeill Branch Station for 1903. By E. B. Ferris. Jan., 1904.
84. Report of field work done at the college station for 1903. By W. R. Perkins. Jan., 1904.
85. Inspection and analyses of commercial fertilizers on sale in the State. By W. F. Hand [and others] Oct., 1904.
86. Insects injurious to pecans. By G. W. Herrick. Nov., 1904.
87. Report of work at McNeill Branch Experiment Station for 1904. By E. B. Ferris. Jan., 1905.
88. Report of field work done at the college station for 1904. By W. R. Perkins. Jan., 1905.
89. The underground waters of Mississippi: A preliminary report. By W. N. Logan and W. R. Perkins. Jan., 1905.
90. The San José scale in Mississippi, and the lime-salt-sulphur wash. By G. W. Herrick. Aug., 1905.
91. Inspection and analyses of commercial fertilizers on sale in the State. By W. F. Hand [and others]. Sept., 1905.
92. Feeding beef cattle in Mississippi. By Archibald Smith and C. I. Bray. Aug., 1905.
93. Peach and plum culture. By A. B. McKay. Sept., 1905.
94. Report of work at McNeill Branch Station for 1905. By E. B. Ferris. Jan., 1906.
95. The dairy cow. By J. S. Moore. Apr., 1906.
96. Insects and diseases liable to be introduced into Msisissippi. By G. W. Herrick. Feb., 1906.
97. Inspection and analyses of commercial fertilizers on sale in the State. Oct., 1906.
98. Varieties of cotton, 1905 and 1906. By W. R. Perkins. Jan., 1907.
99. Fertilizers. By E. B. Ferris. Jan., 1907.
100. Farmers' institute bulletin, 1906. By E. R. Lloyd [and others]. Dec., 1906.
101. Report of work at McNeill Branch Experiment Station for 1906. By E. B. Ferris. Jan., 1907.
102. How to control injurious insects and noxious plant diseases. By G. W. Herrick. Apr., 1907.
103. Farmers' institute bulletin, 1907: Corn improvement in Mississippi. By W. R. Perkins. July, 1907.
104. Inspection and analyses of cottonseed meal on sale in Mississippi. Aug., 1907.
105. Inspection and analyses of commercial fertilizers on sale in the State. Nov., 1907.
106. Report of work at the Delta Station for 1906. By J. W. Fox. Jan., 1908.
107. Pork production at the Delta Station. By J. W. Fox. Feb., 1908. Revised Feb., 1909.
108. Report of work at Holly Springs Branch Experiment Station, 1906. By C. T. Ames. Jan., 1907.
109. Farmers' institute bulletin; The adornment of rural school surroundings. By G. L. Clothier. Apr., 1908.
110. Report of the work at the Holly Springs Station for 1907. By C. T. Ames. Jan., 1908.
111. Experiments in feeding dairy cows. By J. S. Moore. Jan., 1908.
112. Silage vs. hulls and meal. By A. K. Risser and R. R. Welch. Apr., 1908.
113. Cotton experiments, 1907. By W. R. Perkins. June, 1908.
114. Inspection and analyses of cotton-seed meal on sale in Mississippi. Nov., 1908.
115. Inspection and analyses of commercial fertilizers on sale in the State. Nov., 1908.
116. Varieties of cotton, 1908. By W. R. Perkins. Nov., 1908.
117. Cotton culture in Mississippi in areas infested with the Mexican cotton boll weevil. By W. L. Hutchinson. Dec., 1908.
118. Clearing pine lands. By E. B. Ferris. Jan., 1909. See 159.
119. Report of work at the Delta Station for 1907–8. By J. W. Fox. Mar., 1907. [i. e. 1909?]
120. Farmers' institute bulletin 1907 and 1908. By E. R. Lloyd. Dec., 1908.
121. Experiments in feeding beef steers. By J. A. McLean. July 1909.
122. Report of the work at the Holly Springs Station for 1908. By C. T. Ames. July, 1909.
123. Inspection and analyses of commercial feeding stuffs on sale in the State. June, 1909.

124. Pecan culture. By G. L. Clothier. Oct., 1909.
125. Inspection and analyses of feeding stuffs on sale in the State. By W. F. Hand [and others]. Nov., 1909.
126. Inspection and analyses of commercial fertilizers on sale in the State. By W. F. Hand [and others]. Nov., 1909.
127. Inspection and analyses of cotton-seed meal on sale in Mississippi. By W. F. Hand [and others]. Dec., 1909.
128. Inspection and analyses of cotton-seed meal on sale in the State. By W. F. Hand [and others]. Apr., 1910.
129. Sugar cane for sirup making. By E. B. Ferris. Dec., 1909. See 199.
130. Peanuts. By E. B. Ferris. Dec., 1909.
131. Snap beans. By E. B. Ferris. Dec., 1909.
132. Soils of Mississippi: Soil management. By W. L. Hutchinson. Jan., 1910.
133. Inspection and analyses of commercial feeding stuffs. By W. F. Hand [and others]. Jan., 1910.
134. Broom corn. By W. R. Perkins. Jan., 1910.
135. Cotton, 1909. By W. R. Perkins. Jan., 1910.
136. Feeding beef steers on cotton-seed meal, on pasture. By J. A. McLean. Mar., 1910.
137. Inspection and analyses of commercial feeding stuffs on sale in the State. Apr., 1910.
138. Inspection and analyses of commercial feeding stuffs on sale in the State. May, 1910.
139. Boll weevil in Mississippi, 1909. By R. W. Harned. Mar., 1910.
140. Cotton diseases in Mississippi. By R. P. Hibbard. July, 1910.
140B. Cotton diseases in Mississippi. By R. P. Hibbard. July, 1910.
141. Control of diseases of fruits, vegetables, and flowers. By H. C. Thompson. June, 1910.
142. The inspection and analyses of commercial fertilizers on sale in the State. Nov., 1910.
143. Inspection and analyses of cottonseed meal on sale in Mississippi. Dec., 1910.
144. Inspection and analyses of commercial feeding stuffs on sale in the State. Dec., 1910.
145. Inspection and analyses of commercial feeding stuffs on sale in the State. Dec., 1910.
146. Suggestions for growing home fruits. By A. B. McKay. Mar., 1911.
147. Apple growing in Mississippi. By H. C. Thompson. April., 1911.
148. The inspection and analyses of cotton-seed meal on sale in Mississippi. July, 1911.
149. Inspection and analyses of commercial feeding stuffs on sale in the State. Oct., 1911.
150. Inspection and analyses of commercial fertilizers on sale in the State. Oct., 1911.
151. The inspection and analyses of cottonseed meal on sale in the State. Nov., 1911.
152. Inspection and analyses of commercial feeding stuffs on sale in the State. Nov., 1911.
153. Inspection and analyses of commercial feeding stuffs on sale in the State. Nov., 1911.
154. Inspection and analyses of commercial feeding stuffs on sale in the State. Dec., 1911.
155. Recent cotton experiments: Results from the Central Experiment Station. By J. W. Fox, J. R. Ricks, and E. C. Ewing.—Results from the McNeill Experiment Station. By E. B. Ferris.—Results from the Holly Springs Branch Experiment Station. By C. T. Ames.—Results from Delta Branch Experiment Station. By G. B. Walker. Dec., 1911.
156. Inspection and analyses of cottonseed meal on sale in the State. Apr. 1912.
157. Report of work at the Delta Branch Experiment Station for 1911. By G. B. Walker. Feb., 1912.
158. Report of work at McNeill Branch Experiment Station for years 1907 to 1911, inclusive. By E. B. Ferris. Jan., 1912.
159. Clearing pine lands. By E. B. Ferris. Jan., 1912. A revision of 118.
160. The cut-over lands of south Mississippi. By E. B. Ferris. Jan., 1912.
161. Cotton experiments, 1912: Results from the Central Station. By J. R. Ricks and E. C. Ewing.—Results from McNeill Branch Station, 1912. E. B. Ferris.—Results from Holly Springs Branch Station. By C. T. Ames.—Results from the Delta Branch Station. By G. B. Walker.
162. Cotton seed meal as a feed for laying hens. By J. K. Morrison. Sept., 1913.
163. Truck crops for south Mississippi. By E. B. Ferris. 1913.
164. Cotton experiments, 1913: Results from the Central Station. By J. R. Ricks.—Results from McNeill Branch Experiment Station, 1913. By E. B. Ferris.—Holly Springs Branch Experiment Station. By C. T. Ames.—Results from the Delta Branch Station. By G. B. Walker. Feb., 1914.
165. Report of the work done at Holly Springs Branch Experiment Station, 1913. By C. T. Ames. Jan., 1914.
166. Dairying on cut-over pine lands. By E. B. Ferris. 1913.
167. Corn silage compared with hulls for fattening steers. By E. R. Lloyd. Oct., 1914.
168. Bacteriological effects of green manures. By C. F. Briscoe and H. H. Harned. Jan., 1915. See 185.
169. Cotton experiments, 1914: Results from the Central Station. By E. C. Ewing and J. R. Ricks.—Results from the Holly Springs Branch Experiment Station. By C. T. Ames.—Results from the Delta Branch Station. By G. B. Walker. Dec., 1914.
170. Corn: Results from Central Station. By J. R. Ricks.—Holly Springs Branch Experiment Station, four years' results. By C. T. Ames.—Treatment for weevils in stored grain, By R. W. Harned. Jan., 1915.
171. Experiments with small grains. By J. R. Ricks.—Treatment for weevils in stored grain. By R. W. Harned. Jan., 1915.
172. Forage crops. By J. R. Ricks. Jan., 1915.
173. Cotton experiments, 1915. By H. B. Brown [and others]. Jan., 1916.
174. I, Feeding cottonseed meal and hulls to dairy cows; II, feeding value of cottonseed meal versus cold-pressed cottonseed cake; III, feeding value of purchased feeds versus pasture versus soiling crops. By J. S. Moore. 1914 [i. e. 1916?].
175. Cottonseed meal, a good feed for laying hens. By E. P. Clayton. Aug., 1916.
176. The economy of mule production in the South and methods of management. By H. K. Gayle and E. R. Lloyd. Apr., 1916.
177. Some experiments and practical demonstrations in hog feeding at the Delta Branch Experiment Station. By G. B. Walker. Aug., 1916.
178. Cotton experiments, 1916. By J. R. Ricks [and others]. Dec., 1916.
179. Velvet beans in Mississippi. By E. B. Ferris. Aug., 1917.
180. Pasture and forage crops for south Mississippi. By E. B. Ferris. Aug., 1917.
181. Emergency cow feeds. By H. K. Gayle. Aug., 1917.
182. Silages for fattening steers. By H. K. Gayle and E. R. Lloyd. June, 1917.
183. Baby beef and calf feeding. By H. K. Gayle. Sept., 1917.
184. Cotton experiments, 1917. By H. B. Brown and C. T. Ames. Feb., 1918.
185. Bacteriological effects of green manure, Study No. II. By C. F. Briscoe and H. H. Harned. July, 1918. Includes in summary results previously published in 168.
186. Cotton experiments, 1918. By H. B. Brown. Mar., 1919.
187. Cotton experiments, 1919 and 1920. By H. B. Brown and C. B. Anders. Dec., 1920.
188. A report of work at McNeill Branch Experiment Station from 1912 to 1917 inclusive. By E. B. Ferris. Dec., 1920.

189. Corn at Holly Springs Branch Experiment Station. By C. T. Ames. Dec., 15, 1921.
190. Diseases of the sweet potato in Mississippi and their control. By D. C. Neal. Dec. 15, 1920.
191. The mosaic disease of sugar cane in Mississippi in 1920. By L. E. Miles. Dec., 1920.
192. Report of cotton experiments at the Holly Springs Branch Experiment Station, seasons 1919 and 1920 By C. T. Ames. Dec., 1920.
193. Report from Holly Springs Branch Experiment Station for 1915 to 1920, inclusive. By C. T. Ames. Dec., 1920.
194. Report from South Mississippi Branch Experiment Station for 1918 to 1920, inclusive. By E. B. Ferris. Dec., 1920.
195. Experiments in dusting and spraying peaches for the control of curculio, brown rot, and scab. By O. I. Snapp and Leslie Pierce. Dec., 1920.
196. Cotton growing in south Mississippi. By E. B. Ferris. Dec., 1920.

TECHNICAL BULLETINS.

1. A chemical study of the cotton plant. By W. L. Hutchinson and L. G. Patterson. Dec., 1892.
2. Some scale insects of Mississippi with notes on certain species from Texas. By G. W. Herrick. Feb., 1911.
3. Form and structure of certain plant hybrids in comparison with the form and structure of their parents. By H. B. Brown. Jan., 1913.
4. The soils of Mississippi. By W. N. Logan. 1913. See Tech. Bul. 7.
5. Sero-diagnosis of pregnancy in mares. By C. F. Briscoe and E. M. Ranck. 1914.
6. Forage poisoning due to *Claviceps paspali* on paspalum. By H. B. Brown and E. M. Ranck. Feb., 1915.
7. The soils of Mississippi. By W. N. Logan. 1916. A revision of Tech. Bul. 4.
8. A study of certain environmental factors and varietal differences influencing the fruiting of cotton. By F. C. Ewing. June, 1918.
9. North American Ipidae of the subfamily Micracinae, with descriptions of new species and genera. By M. W. Blackman. Dec., 1920.

MISSOURI.

Missouri Agricultural Experiment Station, Columbia.

BULLETINS.

The first 35 bulletins of this list, 1883–1888, were issued as publications of the College of Agriculture of the University of Missouri. Bulletin 35 of the series is the same as Experiment Station Bulletin 2.

1. [Experiment with pigs.] By J. W. Sanborn. Jan., 1883.
2. Feeding steers. By J. W. Sanborn. Apr., 1883.
3. Report of test of varieties of wheat and corn. By J. W. Sanborn. [1883?]
4. Mulching. By J. W. Sanborn. Oct., 1883.
5. Relation of tillage to soil moisture. By J. W. Sanborn. Nov., 1883
6. Relation of dew to soil moisture. By J. W. Sanborn. Dec., 1883.
7. Feeding wheat and corn. By J. W. Sanborn. Feb., 1884.
8. Meal feeding stock at pasture. By J. W. Sanborn. Mar., 1884.
9. Grass-fed pigs. By J. W. Sanborn. May, 1884.
10. Pig feeding experiments. By J. W. Sanborn. 1884.
11. [Value of corn fodder as stock food.] By J. W. Sanborn. 1884.
12. [Seed potatoes.] By J. W. Sanborn. 1884.
13. Good roads and broad wheel tires. By J. W. Sanborn. 1885.
14. Feeding for lean meat. By J. W. Sanborn. Feb., 1885.
15. Contagious pleuro-pneumonia. By Paul Paquin. 1885.
16. Glanders: Second report of the State veterinarian. By Paul Paquin. 1885.
17. General observations [on forage crops]. By J. W. Sanborn. 1885.
18. Subsoiling. By J. W. Sanborn. 1885.
19. Feeding for lean meat. By J. W. Sanborn. 1886.
20. Report of investigations and observations in the horticultural department. By L. R. Taft. 1886.
21. Plants and their uses. By S. M. Tracy. 1886.
22. Corn harvesting. By J. W. Sanborn. 1886.
23. Relation of dew to soil moisture. By J. W. Sanborn. 1886.
24. Contagious diseases and their prevention. By Paul Paquin. 1886.
25. Shrinkage of hay in stacks; distance of planting corn; test of varieties. By J. W. Sanborn. 1886.
26. [Fruits and vegetables: Variety tests.] By L. R. Taft. 1887.
27. Feeding for flesh. By J. W. Sanborn. 1887.
28. Maintenance rations for pigs. By J. W. Sanborn. 1887.
29. Rotation of crops. By J. W. Sanborn. 1887.
30. Fertilization. By J. W. Sanborn. 1887.
31. Texas fever and other diseases. By Paul Paquin. 1887.
32. Plows and plowing. By J. W. Sanborn. 1888.
33. Glanders, mad itch of cattle, etc. By Paul Paquin. 1888.
34. Experimental farming. By J. W. Sanborn. 1888.
35. Same as 2 of the next series.

1. Announcement to farmers; the so-called "Hatch bill;" assent of governor; plans of organization; work and experiments proposed this season; personnel of station. By Paul Schweitzer. 1888.
2. Grasses for pastures and meadows. By J. W. Sanborn. 1888.
3. Generalities and experiments in spaying cattle (to be continued); appendix on glanders. By Paul Paquin. [1888.]
4. A test of tillage implements. By J. W. Sanborn. Dec., 1888.
5. Soil, weather, field trials with corn. By Paul Schweitzer. Feb., 1889.
6. Experiments on seed germination, pea weevil, and apples. By J. W. Clark. [1889?].
7. Green versus dry storage of fodder. [By J. W. Sanborn] [1889?].
8. Experiments on feeding ensilage against dry fodder. By J. W. Sanborn. [1889?].
9. Study of the life history of corn at its different periods of growth. By Paul Schweitzer. Dec., 1889.
10. Analyses of apples at various stages of growth; Bordeaux mixture for grape rot; comparative tests of small fruits and potatoes. By J. W. Clark. Apr., 1890.
11. Texas fever, investigations between September, 1888, and March, 1889 [i. e., 1890]. By Paul Paquin. May, 1890.
12. Black leg. By Paul Paquin. June, 1890.

13. Reports on spraying for the codling moth, apple scab, and black rot of the grape; reports on strawberries, raspberries, blackberries, tomatoes, peas, and potatoes; list of new fruit received for testing. By J. W. Clark. Jan., 1891.
14. Field experiments with corn. By H. J. Waters. Apr., 1891.
15. Wheat, test of varieties, 1889, 1891; oats, test of varieties, 1889, 1891; change of seed: wheat, oats, and potatoes. By H. J. Waters. July, 1891.
16. Covering peach trees to protect the fruit buds; spread of pear blight; temperature and rain tables; strawberry tests; potato trials; seedling fruits. By J. W. Clark. Nov., 1891.
17. Sugar beets. By C. P. Fox. Jan., 1892.
18. Strawberries. By C. A. Keffer. Aug., 1892.
19. Soils and fertilizers, Pt. I. By Paul Schweitzer. Oct., 1892.
20. Soils and fertilizers, Pt. II. By Paul Schweitzer. Jan., 1893.
21. Field experiments with wheat. By C. M. Conner. Apr., 1893 [i. e., Jan., 1896].
22. Seedling strawberries. By C. A. Keffer. July, 1893.
23. Grape culture. By C. A. Keffer. Oct., 1893.
24. Comparative tests of different breeds of beef cattle. By Paul Schweitzer. Jan., 1894 [i. e., June, 1895].
25. An inquiry into the composition of the flesh of cattle. By Paul Schweitzer. Apr., 1894.
26. Dairy management. By A. M. Soule. July, 1894 [i. e., Mar., 1895].
27. Spraying apple trees for destruction of insects and prevention of fungous diseases. By C. A. Keffer. Oct., 1894.
28. Feeding tests with different breeds of beef cattle. By Paul Schweitzer. Jan., 1895 [i. e., Aug., 1895].
29. Feeding wheat to pigs. By Paul Schweitzer. Apr., 1895.
30. Spray calendar. By E. G. Lodeman. Apr., 1895.
31. Spraying orchards and vineyards. By J. C. Whitten. July, 1895.
32. Field experiments with corn. By H. J. Waters and C. M. Conner. Oct., 1895.
33. Inquiry into the principles of potato growing and tests of varieties. By Paul Schweitzer. Jan., 1896.
34. Manures and fertilizers. By H. J. Waters. Apr., 1896.
35. The wooly-aphis of the apple. By J. M. Stedman. Oct., 1896.
36. The lesser apple leaf folder; the leaf crumpler. By J. M. Stedman. Oct., 1896.
37. Texas fever. By J. W. Connaway. Jan., 1897.
38. Winter protection of the peach; peach growing in Missouri. By J. C. Whitten. Apr., 1897.
39. Influence of width of tire on draft of wagons. By H. J. Waters. July, 1897.
40. The sugar beet. By H. J. Waters. Oct., 1897.
41. The San José scale in Missouri. By J. M. Stedman. Jan., 1898.
42. A new orchard pest: The fringed-winged apple-bud moth. By J. M. Stedman. Apr., 1898.
43. Winter forcing of asparagus in the open field; asparagus culture for Missouri. By J. C. Whitten. May, 1898.
44. The fruit-tree bark-beetle; the common apple-tree and peach-tree borers. By J. M. Stedman. Oct., 1898.
45. The sugar beet. By H. J. Waters. Jan., 1899.
46. The grape. By J. C. Whitten. Apr., 1899.
47. The tarnished plant bug. By J. M. Stedman. July, 1899.
48. Texas fever: Immunizing northern breeding cattle for the southern trade (1) by serum inoculation, (2) by tick infestation, (3) by blood inoculation. By J. W. Connaway and M. Francis. Oct., 1899.
49. The apple orchard. By J. C. Whitten. Jan., 1900.
50. A test of spray nozzles. By N. O. Booth. Apr., 1900.
51. The chinch bug. By J. M. Stedman. July, 1902.
52. Influence of height of wheel on the draft of farm wagons. By T. I. Mairs. Oct., 1901.
53. Breeding experiments with sheep. By F. B. Mumford. Nov., 1901.
54. The strawberry false worm; the strawberry leaf roller. By J. M. Stedman. Dec., 1901.
55. Pruning peach trees. By J. C. Whitten. Jan., 1902.
56. Dairy husbandry. By H. J. Waters and C. H. Eckles. Jan., 1902.
57. Raising calves with skim milk. By C. H. Eckles. Apr., 1902.
58. Feeding the dairy cow. By C. H. Eckles. July, 1902.
59. Corn improvement for Missouri. By G. M. Tucker. Oct., 1902.
60. A new Bordeaux powder. By R. M. Bird. Jan., 1903.
61. Apple growing in Missouri. By J. C. Whitten. May, 1903.
62. Hessian fly in Missouri. By J. M. Stedman. June, 1903.
63. Commercial fertilizers. By F. B. Mumford and Paul Schweitzer. Feb., 1904.
64. The "sting" in the apple, the work of the plum curculio [*Cenotrachelus nenuphar* Hbst.] in the apple. By J. M. Stedman. July, 1904.
65. Grain rations for dry lot hog feeding. By E. B. Forbes. Feb., 1905.
66. Analyses of commercial fertilizers. By Paul Schweitzer and R. M. Bird. Dec., 1904.
67. Supplements to corn for fattening hogs. By E. B. Forbes. Apr., 1905.
68. A test of tin can separators; a test of a fly repellant. By C. H. Eckles. July, 1905.
69. Three fungous diseases of the cultivated ginseng. By H. S. Reed. Oct., 1905.
70. Analyses of commercial fertilizers. By Paul Schweitzer and R. M. Bird. Dec., 1905.
71. The fruit-tree leaf roller. By J. M. Stedman. Apr., 1906.
72. Alfalfa growing in Missouri. By M. F. Miller. July, 1906.
73. Cowpeas. By A. E. Grantham. Oct., 1906.
74. The winter killing of peach buds as influenced by previous treatment. By W. H. Chandler. Jan., 1907.
75. Wintering yearling cattle. By H. J. Waters. Apr., 1907.
76. Fattening cattle for the market. By H. J. Waters. Dec., 1907.
77. Inspection of commercial fertilizers [in 1906]. By H. J. Waters. [1907?]
78. Inspection of commercial fertilizers [in 1907]. By P. F. Trowbridge. Jan., 1908.
79. Green forage for hogs. By H. J. Waters. Mar., 1908.
80. Inspection of commercial fertilizers. By P. F. Trowbridge. June, 1908.
81. Specific effects of rations on the development of swine. By E. B. Forbes. Dec., 1909. Published also as Ohio Sta. Bul. 213.
82. Inspection of commercial fertilizers [in 1908]. By P. F. Trowbridge. [n. d.]
83. Soil experiments on the upland loam of southeast Missouri (Jefferson County). By M. F. Miller and C. B. Hutchison. Jan., 1910.
84. Soil experiments on the prairie silt loam of southwest Missouri. By M. F. Miller and C. B. Hutchison. Jan., 1910.
85. Inspection of commercial fertilizers. By P. F. Trowbridge. Jan., 1910.
86. Soil experiments on the rolling limestone upland of southwest Missouri. By M. F. Miller and C. B. Hutchison. Mar., 1910.
87. Cooperative variety tests of corn; variety tests of corn at Columbia. By M. F. Miller and H. D. Hughes. May, 1910.

88. Soil management in the Ozark region. By M. F. Miller. July, 1910.
89. Forest conditions of the Ozark region of Missouri. By S. J. Record. Nov., 1910.
90. Fattening cattle on blue grass pasture. By F. B. Mumford. Jan., 1911.
91. Inspection of commercial fertilizers. By F. B. Mumford [and others]. Feb., 1911.
92. The soils of Sullivan County. By R. C. Doneghue [and others]. Feb., 1911.
93. The soils of Audrain County. By R. C. Doneghue and B. W. Tillman. Feb., 1911.
94. Factors affecting the per cent of fat in cream from farm separators. By C. H. Eckles and H. S. Wayman. Feb., 1911.
95. Pork production with forage crops: Clover, alfalfa, rape, corn, rye grain, cowpeas, soy beans, sorghum. By F. B. Mumford and C. A. Willson. Feb., 1911.
96. Report of the director for the year ending June 30, 1910. By F. B. Mumford. Feb., 1911.
97. Cooperation among fruit growers. By W. H. Chandler. July, 1911.
98. The San José scale in Missouri. By Leonard Haseman. Jan., 1912.
99. Inspection and analyses of commercial fertilizers. By P. F. Trowbridge [and others]. Jan., 1912.
100. Influence of fatness of cow on per cent of fat in milk. By C. H. Eckles. Feb., 1912.
101. Report of the director for the year ending June 30, 1911. By F. B. Mumford. Mar., 1912.
102. Combating orchard and garden enemies. By W. H. Chandler. Apr., 1912.
103. The silo for Missouri farmers. By C. H. Eckles. May, 1912. Superseded by 133.
104. The evergreen bagworm. By Leonard Haseman. May, 1912.
105. Partial bibliography and index of the publications of the college of agriculture and the agricultural experiment station. By H. O. Severance. July, 1912.
106. Cooperative experiments with alfalfa. By M. F. Miller and C. B. Hutchison. Aug., 1912.
107. Farm poultry house construction. By H. L. Kempster. Oct., 1912.
108. Grass investigations in the Ozark upland: First report. By M. F. Miller and C. B. Hutchison. Feb., 1913.
109. Inspection of commercial fertilizers. By F. B. Mumford and P. F. Trowbridge. Feb., 1913.
110. Forage crop rotations for pork production. By F. B. Mumford and L. A. Weaver. Feb., 1913.
111. Report of the director for the year ending June 30, 1912. By F. B. Mumford. Feb., 1913.
112. Corn silage for fattening two-year-old steers. By H. O. Allison. May, 1913.
113. Commercial fertilizers for strawberries. By W. H. Chandler. Aug., 1913.
114. Corn versus oats for work mules. By E. A. Trowbridge. Oct., 1913.
115. Rations for fattening western yearling sheep. By F. B. Mumford, E. A. Trowbridge, and Howard Hackedorn. Nov., 1913.
116. Inspection and analyses of commercial fertilizers, 1913. By P. F. Trowbridge. Feb., 1914.
117. Report of the director for the year ending June 30, 1913. By F. B. Mumford. Feb., 1914.
118. Drainage investigations on the northeast Missouri prairie: First report. By M. F. Miller [and others]. May, 1914.
119. Soil investigations, Jasper County experiment field. By M. F. Miller and R. R. Hudelson. Oct., 1914.
120. Rations for breeding ewes. By Howard Hackedorn. Oct., 1914.
121. Land tenure. By O. R. Johnson and W. E. Foard. Dec., 1914.
122. The Missouri fertilizer law. By F. B. Mumford.—Inspection and analysis of commercial fertilizers, 1914. By P. F. Trowbridge. Jan., 1915.
123. Experiments with farm crops in southwest Missouri. By C. B. Hutchison and T. R. Douglass. Jan., 1915.
124. Profits from spraying twenty-five Missouri orchards in 1914. By W. L. Howard. Jan., 1915.
125. The cost of production on Missouri farms. By O. R. Johnson and W. E. Foard. Feb., 1915.
126. Soil experiments on the level prairies of northeast Missouri. By M. F. Miller, C. B. Hutchison, and R. R. Hudelson. Mar., 1915.
127. Soil experiments on the dark prairies of central and northeast Missouri. By M. F. Miller, C. B. Hutchison, and R. R. Hudelson. Mar., 1915.
128. Soil experiments on the rolling glacial land of north Missouri. By M. F. Miller, C. B. Hutchison, and R. R. Hudelson. Apr., 1915.
129. Soil experiments on the red limestone upland of southwest Missouri: Second report. By M. F. Miller, C. B. Hutchison, and R. R. Hudelson. Apr., 1915.
130. Soil experiments on the gray prairie of southwest Missouri: Second report. By M. F. Miller, C. B. Hutchison, and R. R. Hudelson. Apr., 1915.
131. Work and progress of the agricultural experiment station for the year ending June 30, 1914. By F. B. Mumford. Apr., 1915.
132. The control of the San José scale in Missouri. By Leonard Haseman. Apr., 1915.
133. The silo and its use. By C. H. Eckles. July, 1915. Supersedes 103.
134. Insect pests of field crops. By Leonard Haseman. June, 1915. See 170.
135. The ration and age of calving as factors influencing the growth and dairy qualities of cows. By C. H. Eckles. Sept., 1915.
136. Feeding wheat to fattening swine. By L. A. Weaver. Nov., 1915.
137. The periodical cicada in Missouri. By Leonard Haseman. Nov., 1915.
138. Farm bee-keeping. By E. E. Tyler and Leonard Haseman. Nov., 1915.
139. Inspection of commercial fertilizers, 1915. By F. B. Mumford and P. F. Trowbridge. Jan., 1916.
140. Size of farm business. By O. R. Johnson and W. E. Foard. Apr., 1916.
141. Work and progress of the agricultural experiment station for the year ended June 30, 1915. By F. B. Mumford. Apr., 1916.
142. Successful farm organization. By O. R. Johnson. June, 1916.
143. Variety tests of corn. By C. B. Hutchison and others. July, 1916.
144. Self-feeders for fattening swine, by L. A. Weaver, with directions for constructing a self-feeder, by E. W. Lehmann. Feb., 1917.
145. Inspection of commercial fertilizers, 1916. By P. F. Trowbridge. Feb., 1917.
146. Agricultural lime. By M. E. Miller and H. H. Krusekopf. Mar., 1917. See 171.
147. Work and progress of the agricultural experiment station for the year ended June 30, 1916. By F. B. Mumford. June, 1917.
148. Soil experiments on the Ozark upland. By M. F. Miller and F. L. Duley. July, 1917.
149. Preparation of corn for fattening two-year-old steers. By H. O. Allison. Aug., 1917.
150. Corn silage with and without shelled corn in rations for fattening steers. By H. O. Allison. Aug., 1917.
151. How the station works. [Annual report 1916–17.] By F. B. Mumford. Sept., 1917.
152. Cost of horse labor on the farm. By O. R. Johnson and R. M. Green. Mar., 1918.
153. The soils of Missouri. By M. F. Miller and H. H. Krusekopf.—Statistical data relating to Missouri agriculture. Mar., 1918.
154. Inspection of commercial fertilizers, 1917. By P. F. Trowbridge. Mar., 1918.
155. Meat scrap and sour milk for egg production. By H. L. Kempster and G. W. Hervey. June, 1918.
156. Milk production costs and milk prices. By R. M. Green, D. C. Wood, and A. C. Ragsdale. July, 1918.
157. Fertilizer trials; Wentzville experiment field (Putnam silt loam). By M. F. Miller and F. L. Dudley. July, 1918.

158. Winter rations for dairy heifers. By C. H. Eckles. Oct., 1918.
159. Profits from milk cows on general cornbelt farms. By O. R. Johnson and R. M. Green. Oct., 1918.
160. Inspection of commercial fertilizers, 1918. By F. B. Mumford and L. D. Haigh. Jan., 1919.
161. Combining dormant and first summer spray in apple orchards infested by San José scale. By T. J. Talbert. Jan., 1919.
162. Legumes, Sudan grass, and cereal crops for silage. By C. H. Eckles. Mar., 1919.
163. Work and progress of the agricultural experiment station for the year July 1, 1917, to June 30, 1918. By F. B. Mumford. May, 1919.
164. Capacities of silos and weights of silage. By C. H. Eckles, O. E. Reed, and J. B. Fitch. Aug., 1919. Published also as Kans. Sta. Bul. 222.
165. Cost of producing some Missouri farm crops. By O. R. Johnson and R. M. Green. Aug., 1919.
166. Handling farm manure. By F. L. Duley. Sept., 1919.
167. Renting land in Missouri: Share, share-cash, and cash systems with model forms of lease. By O. R. Johnson and R. M. Green. Feb., 1920.
168. Inspection of comercial fertilizers, 1919. By F. B. Mumford and L. D. Haigh. Jan., 1920.
169. Profitable tomato fertilizers. By J. T. Rosa, jr. Mar., 1920.
170. Insect pests of field crops. By Leonard Haseman. Apr., 1920. A revision of Bul. 134.
171. Agricultural lime. By M. F. Miller and H. H. Krusekopf. June, 1920. A revision of 146.
172. Work and progress of the agricultural experiment station for the year July 1, 1918, to June 30, 1919. By F. B. Mumford, June, 1920.
173. Ashland community survey: An economic, social, and sanitary survey in Howard County, Missouri. By C. C. Taylor and E. W. Lehmann. July, 1920.
174. Hog cholera and immature corn. By J. W. Connaway. Sept., 1920.
175. Influence of capital on farm organization: I, In livestock section. By O. R. Johnson and R. M. Green. Oct., 1920.
176. Nursery and orchard insect pests. [By Leonard Haseman]. Oct., 1920.
177. An investigation of the dipping and fumigation of nursery stock. By K. C. Sullivan. Dec., 1920

RESEARCH BULLETINS.

1. An experimental study of the rest period in plants: The winter rest. First report. By W. L. Howard. Apr., 1910.
2. A study of cause of wide variations in milk production by dairy cows. By C. H. Eckles and O. E. Reed. Apr., 1910.
3. Soils of the Ozark region: A preliminary report on the general character of the soils and the agriculture of the Missouri Ozarks. By C. F. Marbut. June, 1910.
4. Digestion trial with two Jersey cows on full ration and on maintenance. By C. H. Eckles. Oct., 1911.
5. Maintenance trials with five Jersey cows. By C. H. Eckles. Oct., 1911.
6. The distribution of farm labor. By O. R. Johnson. Feb., 1913.
7. Nutrients required for milk production. By C. H. Eckles. Oct., 1913.
8. The killing of plant tissue by low temperature. By W. H. Chandler. Dec., 1913.
9. Carotin, the principal natural yellow pigment of milk fat: I, Review of the literature concerning the yellow plant and animal pigments. By L. S. Palmer and C. H. Eckles. Apr., 1914.
10. Carotin, the principal natural yellow pigment of milk fat: II, Chemical and physiological relations of pigments of milk fat to the carotin and xanthophylls of green plants. By L. S. Palmer and C. H. Eckles. Apr., 1914.
11. Carotins, the principal natural yellow pigment of milk fat: III, The pigments of the body fat, corpus luteum and skin secretions of the cow. By L. S. Palmer and C. H. Eckles. Apr., 1914.
12. Carotin, the principal natural yellow pigment of milk fat: IV, (A), The yellow pigment of blood serum; (B) carotin and xanthophylls during digestion; (C) the pigments of human milk fat. By L. S. Palmer and C. H. Eckles. Apr., 1914.
13. Lactochrome, the yellow pigment of milk whey: Its probable identity with urochrome, the specific yellow pigment of normal urine. By L. S. Palmer and L. H. Cooledge. Apr., 1914.
14. Sap studies with horticultural plants. By W. H. Chandler. May, 1914.
15. An experimental study of the rest period in plants: The summer rest of bulbs and herbaceous perennials. Second report. By W. L. Howard. Apr., 1915.
16. An experimental study of the rest period in plants: Pot-grown woody plants. Third report. By W. L. Howard. Apr., 1915.
17. An experimental study of the rest period in plants: Seeds. Fourth report. By W. L. Howard. Apr., 1915.
18. The maintenance requirement of cattle as influenced by condition, plane of nutrition, age, season, time on maintenance, type, and size of animal. By P. F. Trowbridge, C. R. Moulton, and L. D. Haigh. June, 1915.
19. Studies of the timothy plant: I, The influence of maturity upon the yield, composition, digestibility, palatability and feeding value of timothy hay. By H. J. Waters. June, 1915.
20. Studies of timothy plant: II, The changes in the chemical composition of the timothy plant during growth and ripening, with a comparative study of the wheat plant. By P. F. Trowbridge, L. D. Haigh, and C. R. Moulton. June, 1915.
21. An experimental study of the rest period in plants: Physiological changes accompanying breaking of the rest period. Fifth report. By W. L. Howard. June, 1915.
22. Silage investigations: Normal temperatures and some factors influencing the quality of silage. By C. H. Eckles, O. I. Oshel, and D. M. McGruder. Mar., 1916.
23. The powdery mildews of Avena and Triticum. By G. M. Reed. June, 1916.
24. Influence of plane of nutrition of the cow upon the composition and properties of milk and butter fat: Influence of overfeeding. By C. H. Eckles and L. S. Palmer. May, 1916.
25. Influence of plane of nutrition of the cow upon the composition and properties of milk and butter fat: Influence of underfeeding. By C. H. Eckles and L. S. Palmer. Nov., 1916.
26. The nutrients required to develop the bovine fetus. By C. H. Eckles. Nov., 1916.
27. Effects of feeding cottonseed products on the composition and properties of butter: Influence of the character of the ration and quantity of cottonseed products. By C. H. Eckles and L. S. Palmer. Dec., 1916.
28. Effect of limited food supply on the growth of young beef animals. By P. F. Trowbridge, C. R. Moulton, and L. D. Haigh. June, 1918.
29. The tarnished plant bug and its injury to nursery stock (*Lygus pratensis* Linnaeus). By Leonard Haseman. July, 1918.
30. Composition of the beef animal and energy cost of fattening. By P. F. Trowbridge, C. R. Moulton and L. D. Haigh. Jan., 1919.
31. Some factors influencing the rate of growth and the size of dairy heifers at maturity. By C. H. Eckles and W. W. Swett. Aug., 1918.

32. Some factors favoring or opposing fruitfulness in apples: The effect of certain conditions and practices on the development and performance of the individual fruit spur. By C. C. Wiggins. Sept., 1918.
33. An investigation in transplanting. By J. C. Whitten. Jan., 1919.
34. The preservation of milk for chemical analysis. By L. S. Palmer and L. H. Cooledge. June, 1919.
35. A study of the birth weight of calves. By C. H. Eckles. Aug., 1919.
36. The normal growth of dairy cattle. By C. H. Eckles. Apr., 1920.
37. Varietal resistance and susceptibility of oats to powdery mildew, crown rust, and smuts. By G. M. Reed. July, 1920.
38. Composition of the bovine at birth. By L. D. Haigh, C. R. Moulton, and P. F. Trowbridge. Aug., 1920.
39. Bud selection with special reference to the apple and strawberry. By V. R. Gardner. Aug., 1920.
40. Seasonal changes in the chemical composition of apple spurs. By H. D. Hooker, jr. Sept., 1920.

MONTANA.

Montana Agricultural Experiment Station, Bozeman.

BULLETINS.

1. Organization; announcements. By S. M. Emery. Mar., 1894.
2. Smuts of wheat, oats, and barley. By Luther Foster. May, 1894.
3. Pig feeding. By Luther Foster. June, 1894.
4. Glanders. By W. L. Williams. June, 1894.
5. First annual report [1894]. [By S. M. Emery and others].—Crop statistics of Gallatin County, Montana. Feb., 1895.
6. Measurement of water. By A. M. Ryon. June, 1895.
7. Small grains and potatoes. By Luther Foster. June, 1895.
8. Second annual report [1895]. [By S. M. Emery and others].—Crop statistics of Gallatin County.—Bulletin of progress upon the parasitic ictero-haematuria of sheep. By W. L. Williams. July, 1895.
9. Potatoes. By Luther Foster. Apr., 1896.
10. Small grains: Wheat, oats and barley. By Luther Foster. June, 1896.
11. Devices for obtaining a constant flow in laterals with variable heads in the main canals or reservoirs. By A. M. Ryon. June, 1896.
12. Third annual report [1896]. [By S. M. Emery and others].—Bulletin on the spaying of mares. By W. L. Williams. Sept., 1896.
13. Drinking water. By F. W. Traphagen. Feb., 1897.
14. Montana swine feeding. By Frank Beach. Apr., 1897.
15. Larkspur poisoning of sheep. By E. V. Wilcox. July, 1897.
16. Fourth annual report [1897]. By S. M. Emery. Feb., 1898.
17. The grain aphis; an army cutworm. By E. V. Wilcox. Apr., 1898.
18. The alkali soils of Montana: Preliminary bulletin. By F. W. Traphagen. June, 1898.
19. The sugar beet in Montana. By F. W. Traphagen. Oct., 1898.
20. Fifth annual report, 1898. By S. M. Emery. Aug., 1898.
21. Sheep feeding. By R. S. Shaw. May, 1899.
22. The resistance of strawberries to frost; potato scab; treatment of seed oats for smut; losses caused by the grain aphis; roup of chickens; the internal chicken mite; lupines as plants poisonous to stock; cattle poisoning by the tall larkspur; poisoning of stock by the water hemlock; ergotism in horses; the poisoning of cattle by smutty oat hay; list of plants of known or suspected poisonous properties which occur within the State; some native forage plants of the State. By E. V. Wilcox. June, 1899.
23. Injurious fruit insects; insecticides; insecticide apparatus. By R. A. Cooley. May, 1900
24. Sixth annual report [1899]. By S. M. Emery. July, 1899.
25. Paris green and London purple in Montana. By F. W. Traphagen. Apr., 1900.
26. Poultry raising. By H. C. Gardiner. Apr., 1900.
27. Live stock feeding tests: beef cattle, lambs, and swine. By R. S. Shaw. Apr., 1900.
28. Seventh annual report [1900]. By S. M. Emery. July, 1900. Contains index and Buls. 1-28.
29. The quantity of water used in irrigation and the seepage loss from canals. By Samuel Fortier. Nov., 1900.
30. Weeds of Montana. By J. W. Blankinship. June, 1901.
31. Report of grazing and feeding tests: Beef cattle and lambs. By R. S. Shaw. June, 1901.
32. Eighth annual report [1901]. By Samuel Fortier. Jan. 1902.
33. Sugar beets in Montana, the crop of 1901. By F. W. Traphagen. Jan., 1902.
34. Farmers' weirs: One method of measuring water. By Samuel Fortier. Feb., 1902. See 72.
35. Report of feeding tests: Beef cattle and sheep. By R. S. Shaw. May, 1902.
36. Forage conditions of central Montana. By F. A. Spragg. June, 1902.
37. Pork production in Montana. By R. S. Shaw. Sept., 1902.
38. Food adulteration. By F. W. Traphagen. Oct., 1902.
39. Sheep feeding in Montana. By R. S. Shaw. Nov., 1902.
40. Root crops in Montana. By R. S. Shaw. Nov., 1902.
41. Sugar beets, the crop of 1902. By F. W. Traphagen. Dec., 1902.
42. The codling moth. By R. A. Cooley. Dec., 1902.
43. Duty of water in Montana. By Samuel Fortier. Jan., 1903.
44. Apple growing in Montana. By R. W. Fisher. Feb., 1903.
45. The loco and some other poisonous plants in Montana. By J. W. Blankinship. June, 1903.
46. Two insect pests. By R. A. Cooley. June, 1903.
47. Sheep feeding, winter of 1902-1903. By F. B. Linfield. Sept., 1903.
48. Steer feeding, winter of 1902-1903. By F. B. Linfield. Sept., 1903.
49. Contagious abortion in Montana. By H. C. Gardiner. Oct., 1903.
50. Poultry management. By F. B. Linfield.—Poultry diseases. By H. C. Gardiner. Oct., 1903.
51. First annual report of the State entomologist of Montana. By R. A. Cooley. Dec., 1903.
52. Sugar beets, the crop of 1903. By F. W. Traphagen. Apr., 1904.
53. Creameries and cheese factories: Organization, building, and equipment. By W. J. Elliott. Aug., 1904.
54. The alkali soils of Montana, second bulletin. By F. W. Traphagen. Oct., 1904.
55. Second annual report of the State entomologist. By R. A. Cooley. Dec., 1904.
56. Native economic plants of Montana. By J. W. Blankinship. Apr., 1905.
57. Feeding pigs for the years 1903 and 1904. By F. B. Linfield. Sept., 1905.
58. Fattening cattle for the years 1904 and 1905. By F. B. Linfield. Nov., 1905.
59. Sheep feeding for the years 1904 and 1905. By F. B. Linfield. Nov., 1905.
60. Onion growing: A preliminary report. By R. W. Fisher. Dec., 1905.

61. Food adulteration. By F. W. Traphagen. Dec., 1905.
62. Third annual report of the State entomologist. By R. A. Cooley. Dec., 1905.
63. Dry farming in Montana. By F. B. Linfield and Alfred Atkinson. Jan., 1907.
64. Fourth annual report of the State entomologist of Montana. By R. A. Cooley. Dec., 1906.
65. Seepage and drainage, Part I. By E. T. Tannatt and A. P. Anderson. Mar., 1907.
66. An orchard study of the Bitter Root Valley. By R. W. Fisher. Jan., 1907.
67. Practical beekeeping. By Ralph Benton. June, 1907.
68. Canadian field peas. By Alfred Atkinson. Oct., 1907.
69. The effect of alkali on Portland cement. By A. T. Tannatt and Edmund Burke. Feb., 1908.
70. The Douglas spruce cone moth. By R. A. Cooley. Feb., 1908.
71. Fifth annual report of the State entomologist of Montana. By R. A. Cooley. Feb., 1908.
72. Measurement of water. By E. T. Tannatt and R. D. Kneale. Feb., 1908. A revision of 34.
73. Pig feeding experiments. F. B. Linfield. Sept., 1908.
74. Dry farming investigations in Montana. By Alfred Atkinson and J. B. Nelson. Dec., 1908.
75. Sixth annual report of the State entomologist of Montana. By R. A. Cooley. [Dec., 1908].
76. Seepage and drainage, Part II. By E. T. Tannatt and R. D. Kneale. Feb., 1909.
77. Fruit tree planting in Montana. By R. W. Fisher. July, 1909.
78. Steer feeding: Small grains and clover hay for two-year old steers. By R. W. Clark. Jan., 1910.
79. Seventh annual report of the State entomologist of Montana. By R. A. Cooley. Feb., 1910.
80. Ornamental trees and shrubs for Montana. By R. W. Fisher. July, 1910.
81. The destruction of hydraulic cements by the action of alkali salts. By Edmund Burke and R. M. Pinckney. Nov., 1910.
82. Eighth annual report of the State entomologist, 1910. By R. A. Cooley. Dec., 1910.
83. Dry farming investigations in Montana. By Alfred Atkinson and J. B. Neslon. Jan., 1911.
84. Grain investigations with wheat, oats, and barley. By Alfred Atkinson. Jan., 1911.
85. Tick control in relation to the Rocky Mountain spotted fever. By R. A. Cooley. May, 1911.
86. The use of soap to retard the settling of certain arsenicals. By J. R. Parker. July, 1911.
87. Dry farm moisture studies. By Alfred Atkinson, H. O. Buckman, and L. F. Gieseker. Sept., 1911.
88. Ninth annual report of the State entomologist of Montana. By R. A. Cooley. Feb., 1912.
89. Experiments with pigs. By R. W. Clark. June, 1912.
90. The internal use of carbolic acid for the prevention of contagious abortion in cattle with some notes on the relation of granular vaginitis to abortion. By W. J. Taylor. July, 1912.
91. Winter injury to fruit buds of the apple and the pear. By O. B. Whipple. July, 1912.
92. Tenth annual report of the State entomologist of Montana. By R. A. Cooley. Nov., 1912.
93. Fergus County substation: Report on the work and plans. By J. M. Stephens. July, 1913.
94. Clover and corn silage as feeds for dairy cows. By R. W. Clark. July, 1913.
95. Horse-feeding experiments. By R. W. Clark. Aug., 1913.
96. A contribution to our knowledge of apple scab. By H. E. Morris. Feb., 1914.
97. Farm management in the Gallatin Valley. By E. L. Currier. Feb., 1914.
98. Eleventh annual report of the State entomologist of Montana. By R. A. Cooley. Feb., 1914.
99. A report on Montana climate. Temperature records, 1898–1913. By Edmund Burke and R. M. Pinckney. Mar., 1914.
100. Winter wheat. By Alfred Atkinson and J. B. Nelson. Aug., 1914.
101. First annual report of the State Grain Laboratory of Montana. By Alfred Atkinson and B. W. Whitlock. Oct., 1914.
102. Twelfth annual report of the State entomologist of Montana. By R. A. Cooley. Dec., 1914.
103. Irrigation development in Montana. By S. T. Harding. Jan., 1915.
104. Tomato tests. By O. B. Whipple and L. G. Schermerhorn. Feb., 1915.
105. The intradermal test in bovine tuberculosis. By Howard Welch. Feb., 1915.
106. Thinning experiments with potatoes; a preliminary report. By O. B. Whipple. Oct., 1915.
107. Corn in Montana: History, characteristics, adaptation. By Alfred Atkinson and M. L. Wilson. Oct., 1915.
108. Second annual report of the State Grain Laboratory of Montana. By Alfred Atkinson and B. W. Whitlock. Oct., 1915.
109. Thirteenth annual report of the State entomologist of Montana. By R. A. Cooley. Feb., 1916.
110. Dry farm grain tests in Montana. By Alfred Atkinson and N. C. Donaldson. Feb., 1916.
111. Profits in farming on irrigated areas in the Gallatin Valley, Montana. By E. L. Currier. Oct., 1916.
112. Fourteenth annual report of the State entomologist of Montana. By R. A. Cooley.—Notes on the more common mosquitoes of Montana. By J. R. Parker. Dec., 1916.
113. Third annual report of the State Grain Laboratory of Montana. By Alfred Atkinson, B. W. Whitlock, and E. W. Jahnke. Dec., 1916.
114. Report of the work of the horticultural substation. By O. B. Whipple. Dec., 1916.
115. Investigations on irrigation pumping plants. By H. E. Murdock. Jan., 1917.
116. Dry farm crop rotations and cultural methods. By Alfred Atkinson, J. M. Stephens, and G. W. Morgan. Mar., 1917.
117. Studies on the composition and nutritive value of clover hay and clover silage in Montana. By Edmund Burke. Apr., 1917.
118. Sunflower silage for dairy cows, a preliminary report. By C. N. Arnett and Oscar Tretsven. Sept., 1917.
119. Hairlessness and goiter in new-born domestic animals. By Howard Welch. Sept., 1917.
120. Date and rate-of-seeding tests with spring grains under irrigation. By Alfred Atkinson. Oct., 1917.
121. Crown-gall injury in the orchard. By D. B. Swingle and H. E. Morris. Jan., 1918.
122. The cost of growing wheat on typical nonirrigated areas in Montana. By E. L. Currier. Jan., 1918.
123. Plum pocket and leaf gall on American plums. By D. B. Swingle and H. E. Morris. Feb., 1918.
124. Fifteenth annual report of the State entomologist of Montana. By R. A. Cooley. Feb., 1918.
125. Fourth annual report of the Montana Grain Inspection Laboratory. By Alfred Atkinson and E. W. Jahnke. Mar., 1918.
126. Sixteenth annual report of the State entomologist of Montana. By R. A. Cooley. Dec., 1918.
127. Fifth annual report of the Montana Grain Inspection Laboratory. By Alfred Atkinson, E. W. Jahnke, and C. R. Haller. Dec., 1918.
128. Forage crop experiments with swine. By C. N. Arnett and W. E. Joseph. Feb., 1919.
129. Farm practice in growing sugar beets in the Billings region of Montana. By S. B. Nuckolls and E. L. Currier. Mar., 1919.
130. Degeneration in potatoes. By O. B. Whipple. Apr., 1919.
131. Growing and feeding sunflowers in Montana: Growing sunflowers. By Alfred Atkinson and J. B. Nelson.—Feeding sunflowers. By C. M. Arnett, W. E. Joseph, and Oscar Tretsven. Apr., 1919.
132. Corn experiments at the Judith Basin substation. By W. P. Baird. June, 1919.
133. Seventeenth annual report of the State entomologist of Montana. By R. A. Cooley. Dec., 1919.
134. Studies on the digestibility of sunflower silage. By W. E. Joseph and M. J. Blish. Jan., 1920.

135. Sixth annual report of the Montana Grain Inspection Laboratory. By Alfred Atkinson and E. W. Jahnke. Jan., 1920.
136. Seventh annual report of the Montana Grain Inspection Laboratory. Montana grades for grain; Montana State grain inspection law. By P. V. Cardon, W. O. Whitcomb, and W. F. Day. Aug., 1920.
137. The septic tank, a method of sewage disposal for the isolated home. By H. E. Murdock. Sept., 1920.
138. Summer fallowing experiments in the Judith Basin. By W. P. Baird. Oct., 1920.

NEBRASKA.

Agricultural Experiment Station of Nebraska, Lincoln.

BULLETINS.

[1]. Irrigation in Nebraska. By L. E. Hicks. Jan., 1888.
[2]. Twenty-two common insects of Nebraska. By C. McMillan. Feb., 1888.
[3]. Southern cattle plague and yellow fever, from the etiological and prophylactic standpoints. F. S. Billings. Mar., 1888. See 7–10.
[4]. Swine plague. By F. S. Billings. June, 1888.
5. On certain injurious insects of the year 1888. By Lawrence Bruner. Jan., 1889.
6. Report of progress, including a history of the fields and description of the animals available for experimentation. By H. H. Wing.—Field experiments and observations for the year 1888. By J. G. Smith.—Meteorological record for the year 1888. By D. B. Brace and F. F. Almy. Mar., 1889.
7–10. Original investigations of cattle diseases in Nebraska, 1886–1888: Southern cattle plague (Texas fever) and yellow fever; the cornstalk disease in cattle; the so-called hydrophobia in cattle; contagious inflammation of the cornea in cattle; a singular disease of the sexual organs in cows. By J. S. Billings. June, 1889. See 22–23 and 28.
11. The smut of wheat and oats. By J. C. Arthur and C. E. Bessey.—The smut of Indian corn. By C. E. Bessey.—A preliminary enumeration of the rusts and smuts of Nebraska. By H. J. Webber and C. E. Bessey.—Notes on the fungi of economic interest observed in Lancaster County, Nebraska, during the summer of 1889. By Roscoe Pound.—Observations on the cottonwood. By A. F. Woods. Dec., 1889.
12. Field experiments for 1889. By J. G. Smith. Feb., 1890.
13. Experiments in the culture of the sugar beet in Nebraska. By H. H. Nicholson and Rachel Lloyd. Apr., 1890.
14. Insects injurious to young trees on tree claims. By Lawrence Bruner. June, 1890.
15. Meteorological record for the year 1889. By D. B. Brace and F. F. Almy.—Record of soil temperatures for the year 1889; farm notes. By J. G. Smith. Sept., 1890.
16. Experiments in the culture of the sugar beet in Nebraska. By H. H. Nicholson and Rachel Lloyd. Apr., 1891.
17. Field experiments and observations for 1890. By J. G. Smith.—Meteorological observations for 1890. By D. B. Brace and H. N. Allen. June, 1891.
[18]. A preliminary report on the native trees and shrubs of Nebraska. By C. E. Bessey. [1891?]
19. Farm notes for 1891. By C. L. Ingersoll. [1892?]
20. Meteorological observations for 1891. By D. B. Brace. Mar., 1892.
21. Experiments in the culture of the sugar beet in Nebraska. By H. H. Nicholson and Rachel Lloyd. Mar., 1892.
22–23. The corn-fodder disease in cattle and other farm animals, with special relation to contagious pleuropneumonia in American beeves in England. By F. S. Billings. Oct., 1892. A revision of 7–10, Art. II.
24. Notes on certain caterpillars attacking sugar beets. By Lawrence Bruner. Sept., 1892.
25. Detasseling corn. By C. L. Ingersoll. Dec., 1892.
26. Meteorological observations for 1892. By D. B. Brace [and others]. Mar., 1893.
27. Experiments in the culture of the sugar beet in Nebraska. By H. H. Nicholson and T. L. Lyon. Mar., 1893.
25 [i. e. 28]. Original investigations in cattle diseases in Nebraska: Southern cattle plague (Texas fever). Third edition. By F. S. Billings. Mar., 1893. Supersedes 3, and 7–10, Art I.
29. Cost of farm crops. By C. L. Ingersoll and S. W. Perin. Apr., 1893.
30. The influences of changes of food and temperature on the quality and quantity of the milk of dairy cows. By C. L. Ingersoll and H. B. Duncanson. Oct., 1893.
31. The Russian thistle in Nebraska. By C. E. Bessey. Dec., 1893.
32. Wheat and some of its products By C. L. Ingersoll, C. E. Bessey, H. H. Nicholson, and F. S. Johnson. Feb., 1894.
33. Meteorological observations for 1893. By D. B. Brace. Apr., 1894.
34. Chinch bugs. By Lawrence Bruner and H. G. Barber. May, 1894.
35. Alfalfa; farm notes. By C. L. Ingersoll. May, 1894.
36. Experiments in the culture of the sugar beet in Nebraska. By H. H. Nicholson and E. E. Nicholson. May, 1894.
37. Monthly weather review of the Nebraska weather service, 1894. By G. D. Swezey and G. A. Loveland. [In seven parts.] Jan.–Dec., 1894. Name of station and bulletin numbers are printed inconspicuously at foot of title pages of the various parts, part 1 for Jan.–May; parts 2–7, monthly.
38. Nebraska and the beet-sugar industry. By Max Hollrung. Translated by H. H. Nicholson. Aug., 1894. Translated from Ztschr. Ver. Rübenzuckerind., 43 (1893), p. 1005-1034.
39. Some obstacles to successful fruit growing. By F. W. Card. Jan., 1895.
40. A preliminary list of the honey-producing plants of Nebraska. By C. E. Bessey. Jan., 1895.
41. Water supply in Nebraska. By O. V. P. Stout. Feb., 1895.
42. Nebraska weather review for 1895. By G. D. Swezey and G. A. Loveland. [In thirteen parts.] Jan.–Dec., 1895.
43. The conservation of soil moisture by means of subsoil plowing. By T. L. Lyon. Sept., 1895.
44. Experiments in the culture of the sugar beet in Nebraska. By H. H. Nicholson and T. L. Lyon. Apr., 1896.
45. The rainfall of Nebraska. By G. D. Swezey and G. A. Loveland. June, 1896.
46. Nebraska weather and climate for 1896. By G. D. Swezey and G. A. Loveland. Jan.–July, 1896.
47. Serum therapy in hog cholera. By A. T. Peters. Feb., 1897.
48. Windbreaks. By F. W. Card. Apr., 1897.
49. Suggestions for chicory culture. By T. L. Lyon. Apr., 1897.
50. Notes on pruning. By F. W. Card. Nov., 1897.
51. Observations on the codling moth. By F. W. Card. Dec., 1897.

52. Cornstalk disease. By A. T. Peters. Jan., 1898.
53. A preliminary report on experiments with forage crops. By T. L. Lyon. Mar., 1898.
54. The effect of certain methods of soil treatment upon the corn crop. By T. L. Lyon. June, 1898.
55. Ornamental planting. By F. W. Card. Aug., 1898.
56. Methods of tree planting. By F. W. Card. Aug., 1898.
57. Proceedings of agricultural students' association, 1898–99. Apr., 1899.
58. Annual forage plants for summer pasture. By T. L. Lyon and A. L. Haecker. Apr., 1899.
59. The homemade windmills of Nebraska. By E. H. Barbour. 1899.
60. Experiments in the culture of the sugar beet in Nebraska. By H. H. Nicholson and T. L. Lyon. Sept., 1899.
61. Hungarian brome grass (*Bromus inermis*). By T. L. Lyon. Dec., 1899.
62. The feeding value of sorghum as shown by chemical analysis. By R. W. Thatcher. Mar., 1900.
63. The fatal effect of green sorghum. (Preliminary report.) By R. S. Hiltner. Apr., 1900.
64. Proceedings of agricultural students association, 1899–1900. May, 1900.
65. Blackleg: its nature, cause, and prevention. By A. T. Peters. June, 1900.
66. Sheep-feeding experiments in Nebraska. By E. A. Burnett. Aug., 1900.
67. Experiments in the culture of the sugar beet in Nebraska. By H. H. Nicholson and T. L. Lyon. Aug., 1900.
68. Feeding skim milk to calves. By A. L. Haecker. Mar., 1901.
69. Some forage plants for summer feed. By T. L. Lyon and A. L. Haecker. Mar., 1901.
70. Locusts or grasshoppers. By Lawrence Bruner. Mar., 1901.
71. Sheep feeding experiments in Nebraska. (Second experiment.) By E. A. Burnett. Sept., 1901.
72. The adaptation and improvement of winter wheat. By T. L. Lyon. Apr., 1902.
73. Experiments in the culture of the sugar beet in Nebraska. By T. L. Lyon and A. T. Wiancko. May, 1902.
74. Mange in cattle and horses and lice on hogs. By A. T. Peters. May, 1902.
75. Feeding experiments with cattle and pigs. By E. A. Burnett and H. R. Smith. Nov., 1902.
76. Experiments with dairy herd: The herd record; ration tests for dairy cows; the best week in a cow's lactation period. By A. L. Haecker. Jan., 1903.
77. Poisoning of cattle by common sorghum and kafir corn (*Sorghum vulgare*). By A. T. Peters, H. B. Slade, and Samuel Avery. Jan., 1903.
78. Macaroni wheats. By T. L. Lyon. Mar., 1903.
79. Experiments in orchard culture. By R. A. Emerson. July, 1903.
80. Experiments in mulching garden vegetables. By R. A. Emerson. July, 1903.
81. Experiments in the culture of the sugar beet in Nebraska. By T. L. Lyon and A. T. Wiancko. Sept., 1903.
82. Kherson oats. By T. L. Lyon. Mar., 1904.
83. Cooperative variety tests of corn in 1902 and 1903. By T. L. Lyon. Apr., 1904.
84. Pasture, meadow, and forage crops. By T. L. Lyon and A. S. Hitchcock. June, 1904.
85. Feeding experiments with cattle. By E. A. Burnett and H. R. Smith. Oct., 1904.
86. Destroying prairie dogs. By A. T. Peters and Samuel Avery. Oct., 1904.
87. A test of calf rations. By A. L. Haecker.—Methods of controlling contamination of milk during milking. By A. L. Haecker and C. W. Melick. Feb., 1905.
88. Apple scab and cedar rust. By R. A. Emerson. May, 1905.
89. Winter wheat. By T. L. Lyon and A. Keyser. June, 1905.
90. Cattle-feeding experiment. By H. R. Smith. Nov., 1905.
91. Experiments with corn. By T. L. Lyon. Dec., 1905.
92. Cover-crops for young orchards. By R. A. Emerson. June, 1906.
93. Cattle feeding experiments. By H. R. Smith. June, 1906.
94. Fattening pigs on corn and tankage. By E. A. Burnett. Oct., 1906.
95. Crop production in western Nebraska. By W. P. Snyder. (North Platte Substation Bul. 1.) Mar., 1907.
96. Some insects injurious to wheat during 1905–6. By Lawrence Bruner and M. H. Swenk. Mar., 1907.
97. Potato experiments. By R. A. Emerson. Apr., 1907.
98. Spraying demonstrations in Nebraska apple orchards. By R. A. Emerson. Apr., 1907.
99. Growing hogs in western Nebraska. By W. P. Snyder. (North Platte Substation Bul. 2.) June, 1907.
100. Economical rations in beef production. By H. R. Smith. Sept., 1907.
101. Dairy herd record for ten years: cost of butter fat production. By A. L. Haecker. Nov., 1907.
102. The effect of bleaching upon the quality of wheat flour. By F. J. Alway. Oct., 1907.
103. The budrot of carnations. By F. D. Heald.—A mite accompanying the budrot of carnations. By R. H. Wolcott. Jan., 1908.
104. Cultivation of small grains: the use of the fanning mill for selecting seed wheat and seed oats. By E. G. Montgomery. May, 1908.
105. Growing cattle in western Nebraska. By W. P. Snyder. (North Platte Substation Bul. 3.) Mar., 1908.
106. Does it pay to spray Nebraska apple orchards. By R. A. Emerson and F. E. Denny. May, 1908.
107. Foods supplementary to corn in fattening pigs; the effect of food on breaking strength of bones. By E. A. Burnett. Dec., 1908.
108. Milking machines. By A. L. Haecker and E. M. Little. Dec., 1908.
109. Crop production in western Nebraska: principles of cultivation. By W. P. Snyder and W. W. Burr. (North Platte Substation Bul. 4.) Apr., 1909.
110. Report of the Nebraska seed laboratory. By E. M. Wilcox and Nelle Stevenson. June, 1909.
111. Changes in the composition of the loess soils of Nebraska caused by cultivation. By F. J. Alway. Dec., 1909.
112. Experiments with corn. By E. G. Montgomery. Dec. 15, 1909.
113. Oats: Variety tests, rate of sowing, cultivation. By E. G. Montgomery. Feb. 15, 1910.
114. Storing moisture in the soil. By W. W. Burr. (North Platte Substation Bul. 5.) May 3, 1910.
115. The determination of humus. By F. J. Alway, E. K. Files, and R. M. Pinckney. June, 1910.
116. Economical beef production. By H. R. Smith. Dec. 15, 1910.
117. Growing feeder steers in western Nebraska. By W. P. Snyder. (North Platte Substation Bul. 6. Feb. 1, 1911.
118. Growing crops in western Nebraska. By W. P. Snyder and W. W. Burr. (North Platte Substation Bul. 7.) Feb. 15, 1911.
119. Spraying as an essential part of profitable apple orcharding. By R. A. Emerson, R. F. Howard, and V. V. Westgate. Mar. 15, 1911.
120. Alfalfa management. By C. W. Pugsley. (Extension Bul. 1.) May 12, 1911.
121. Growing hogs in Nebraska: The cost of a 50-pound pig, and the cost of keeping brood sows; the cost of growing pigs on alfalfa pasture and grain. By W. P. Snyder. (North Platte Substation Bul. 8.) June 30, 1911.
122. Cost of growing crops in Nebraska. By C. W. Pugsley. (Extension Bul. 2.) June 30, 1911.

123. Fattening hogs in Nebraska: Alfalfa with corn for fattening hogs; comparisons of corn, corn and alfalfa, and supplementary foods for fattening hogs. By W. P. Snyder. (North Platte Substation Bul. 9.) Feb. 22, 1912.
124. Fattening hogs in Nebraska: Alfalfa hay with corn for fattening hogs; comparisons of corn, corn and alfalfa, with supplementary foods for fattening hogs. By W. P. Snyder. (North Platte Substation Bul. 10.) June 15, 1912.
125. Wheat breeding experiments. By E. G. Montgomery. Mar. 15, 1912.
126. Native seed corn. By E. G. Montgomery. Mar. 20, 1912.
127. Competition in cereals. By E. G. Montgomery. May 6, 1912.
128. Studies in water requirements of corn. By E. G. Montgomery and T. A. Kiesselbach. May 8, 1912.
129. Results of the Douglas County cow testing association. By A. L. Haecker and J. H. Frandsen. May 1, 1912.
130. Forage rations for growing horses. By W. P. Snyder. (North Platte Substation Bul. 11.) June 1, 1912.
131. Smuts of Nebraska cereals. By E. M. Wilcox. (Extension Bul. 7.) Aug. 30, 1912.
132. Beef production: Comparisons of rations; comparisons of breeds and types. By H. R. Smith. Oct. 21, 1912.
133. Care of milk and cream on the farm. By J. H. Frandsen. (Extension Bul. 8.) Oct. 21, 1912.
134. A dry rot of the Irish potato tuber. By E. M. Wilcox and G. K. K. Link. Mar. 25, 1913. A popular edition of Research Bul. 1.
135. Growing crops in western Nebraska. By W. P. Snyder and W. W. Burr. (North Platte Substation Bul. 12.) Apr. 1, 1913.
136. Alfalfa inoculation tests. By C. W. Pugsley. Apr. 10, 1913.
137. Growing forest trees in western Nebraska; shrubs and ornamentals. By W. P. Snyder. (North Platte Substation Bul. 13.) May 26, 1913.
138. Silo construction in Nebraska. By L. W. Chase. June, 1913. Popular edition. May 26, 1913.
139. Dairy herd records for fourteen years. By J. H. Frandsen and A. L. Haecker. Apr. 6, 1914.
140. The storage and use of soil moisture. By W. W. Burr. (North Platte Substation Bul. 14.) Mar. 12, 1914. A popular edition of Research Bul. 5.
141. Irrigated field crops in western Nebraska. By Fritz Knorr. (Scottsbluff Substation Bul. 1.) May 1, 1914.
142. Vegetable gardens on irrigated farms in western Nebraska. By Fritz Knorr. (Scottsbluff Substation Bul. 2.) Apr. 27, 1914.
143. Feeding baby beef: Forage and grain rations for fattening calves under western Nebraska conditions. By W. P. Snyder. (North Platte Substation Bul. 15.) June 22, 1914.
144. Ground wheat versus whole wheat for fattening pigs. By R. K. Bliss and C. B. Lee.—Unpublished data from the North Platte station. By W. P. Snyder. Aug. 15, 1914.
145. Handling silage. By L. W. Chase and I. D. Wood. Sept. 1, 1914.
146. Home mulched vs. northern seed potatoes for eastern Nebraska. By R. A. Emerson. Dec. 24, 1914. Also popular edition. Apr. 15, 1915.
147. Pork production. By W. P. Snyder. (North Platte Substation Bul. 16.) Apr. 10, 1915. Popular edition. May 26, 1915.
148. A handbook of Nebraska grasses, with illustrated keys for their identification, together with a general account of their structure and economic importance. By E. M. Wilcox, G. K. K. Link, and V. W. Pool. Apr. 1, 1915.
149. Raising the dairy calf. By E. G. Woodward. Apr. 5, 1915.
150. Soy beans and cowpeas. By T. A. Kiesselbach. Apr. 6, 1915.
151. Corn silage and alfalfa hay for beef production. By R. K. Bliss and C. B. Lee. May 15, 1915.
152. Management of irrigated land. By Fritz Knorr. (Scottsbluff Substation Bul. 3.) June, 1915.
153. Lamb feeding experiments: Fattening western lambs; fattening native lambs; a comparison of native and western lambs. By H. J. Gramlich. Oct. 25, 1915.
154. The prairie dog and its control. By M. H. Swenk. Aug. 15, 1915.
155. Rotations and tillage methods in western Nebraska. By W. P. Snyder and W. M. Osborn. (North Platte Substation Bul. 17.) June 1, 1916. Popular edition, Sept. 25, 1915.
156. Farming practice in the sand hills section of Nebraska. By James Cowan. (Valentine Substation Bul. 1.) May 25, 1916.
157. Farm management studies in eastern Nebraska. By H. C. Filley. Oct. 15, 1916.
158. Why, when and how to spray. By J. R. Cooper. Feb. 15, 1917. A popular edition of Research Bul. 10.
159. Pork production on irrigated lands in western Nebraska. By J. A. Holden. Apr. 10, 1917.
160. Oats investigations. By T. A. Kiesselbach and J. A. Ratcliff. Nov. 15, 1917.
161. Methods of controlling blister canker. By J. B. Cooper. Dec. 15, 1917. A popular edition of Research Bul. 12.
162. Wintering mature brood sows. By W. P. Snyder. (North Platte Substation Bul. 18.) Dec. 15, 1917.
163. Freezing injury of seed corn. By T. A. Kiesselbach and J. A Ratcliff. Apr., 1918. A popular edition of Research Bul. 16.
164. Chopped alfalfa versus bran in grain ration for dairy cows. (North Platte Substation Bul. 19.) July, 1918.
165. Growing pigs in summer. By W. P. Snyder. (North Platte Substation Bul. 20.) June 15, 1918.
166. Soy beans. By T. A. Kiesselbach. May 1, 1918.
167. Feeding lambs in the fall. By H. J. Gramlich. July, 1918.
168. Sugar-saving substitutes in ice cream. J. H. Frandsen, J. W. Rovner, and John Luithly. July, 1918.
169. Forage crops. By T. A. Kiesselbach. Dec., 1918.
170. Fall lamb feeding. By H. J. Gramlich. Oct., 1918.
171. Crop production in the northern sand hills. (Valentine Substation Bul. 2.) By James Cowan. May, 1919.
172. Spring grains in western Nebraska: Dates of seeding and comparative yields. By L. L. Zook. Mar., 1919.
173. Supplementary feeds in fattening lambs. By H. J. Gramlich. July, 1919.
174. Beef production. By H. J. Gramlich. Sept., 1919.
175. Experimental hog feeding. H. J. Gramlich and E. L. Jenkins. Sept., 1920.
176. Summer hog feeding. By H. J. Gramlich. Dec., 1920.

RESEARCH BULLETINS.

1. A dry rot of the Irish potato tuber. By E. M. Wilcox, G. K. K. Link, and V. W. Pool. Mar. 1, 1913. See Bul. 134.
2. The inheritance of quantitative characters in maize. By R. A. Emerson and E. M. East. Apr. 1, 1913.
3. Studies on the relation of the non-available water of the soil to the hygroscopic coefficient. By F. J. Alway. June 25, 1913.

4. The inheritance of a recurring somatic variation in variegated ears of maize. By R. A. Emerson. Feb. 1, 1914.
5. The storage and use of soil moisture. By W. W. Burr. July 1, 1914.
6. Transpiration as a factor in crop production. By T. A. Kiesselbach. June 20, 1916.
7. A genetic study of plant height in *Phaseolus vulgaris*. By R. A. Emerson. Mar. 15, 1916.
8. The colloidal swelling of wheat gluten in relation to milling and baking. By F. W. Upson and J. W. Calvin. June 30, 1916.
9. A physiological study of two strains of Fusarium in their casual relation to tuber rot and wilt of potato. By G. K. K. Link. Sept. 15, 1916. Reprint June 30, 1917.
10. Spraying experiments in Nebraska. By J. R. Cooper. Apr. 10, 1917.
11. Relation of size of seed and sprout value to the yield of small grain crops. By T. A. Kiesselbach and C. A. Helm. Dec. 1, 1917.
12. Studies of the etiology and control of blister canker on apple trees. By J. R. Cooper. Dec. 15, 1917.
13. Studies concerning the elimination of experimental error in comparative crop tests. By T. A. Kiesselbach. June 15, 1918.
14. Fusarium blight of the soy bean and the relation of various factors to infection. By R. O. Cromwell. Nov., 1919.
15. Farm types in Nebraska, as determined by climatic, soil, and economic factors. By R. R. Spafford. Mar. 15, 1919.
16. Freezing injury of seed corn. By T. A. Kiesselbach and J. A. Ratcliff. June, 1920.
17. The immunizing value of commercial vaccines and bacterins against hemorrhagic septicemia. By Leunis Van Es and H. M. Martin. June, 1920.
18. The value of commercial vaccines and bacterins against fowl cholera. By Leunis Van Es and N. M. Martin. June, 1920.

NEVADA.

Nevada Agricultural Experiment Station, Reno.

BULLETINS.

1. History, organization, and proposed work of the station. By LeR. D. Brown. June, 1888.
2. The investigation of the interdependence of plant life and climatic conditions of Nevada. By W. M. Miller. Sept., 1888.
3. Meteorological report for 1888. By W. M. Miller. Dec., 1888.
4. Meteorological report for January, February, and March, 1889. By W. M. Miller. Mar., 1889.
5. Meteorological report for April, May, and June, 1889. By W. S. Devol. June, 1889.
6. Meteorological report for July, August, and September, 1889. By W. S. Devol. Sept., 1889.
7. Meteorological report for October, November, and December, 1889. By W. S. Devol. Dec., 1889.
8. The codling moth. By F. H. Hillman. Jan., 1890.
9. A serious rose pest (*Lithophane antennata* Walker). By F. H. Hillman. May, 1890.
10. The pear and cherry slug (*Selandria cerasi* Peck). By F. H. Hillman. July, 1890.
11. Plant-lice infesting the apple (*Aphis mali* Fabr.; *A. malifoliæ* Fitch; *Schizoneura lanigera* Haus.). By F. H. Hillman. Sept., 1890.
12. Sugar beet culture. By R. H. McDowell. Apr., 1891.
13. Sugar beet experiments. By R. H. McDowell and N. E. Wilson. Oct., 1891. See also 23.
14. Potato experiments. By R. H. McDowell and N. E. Wilson. Dec., 1891.
15. Dodder (Cuscuta) parasitic on alfalfa. By R. F. Hillman. Jan., 1892.
16. The creamery industry. By N. E. Wilson. Apr., 1892.
17. The woolly aphis of the apple (*Schizoneura lanigera* Haus.). By F. H. Hillman. July, 1892.
18. Cheese and its manufacture. By N. E. Wilson. Nov., 1892.
19. Sugar beets. By R. H. McDowell and N. E. Wilson. Dec., 1892.
20. Potatoes; tobacco. By R. H. McDowell. Mar., 1893.
21. Nevada weeds, I. By F. H. Hillman. Sept., 1893.
22. Nevada weeds, II. By F. H. Hillman. Dec., 1893.
23. Sugar beets. By N. E. Wilson. Dec., 1893. Reprint in part of 13.
24. Early flora of the Truckee Valley. By F. H. Hillman. Nov., 1894.
25. Irrigation. By R. H. McDowell. Dec., 1894.
26. Feeding stuffs. By N. E. Wilson and Frederick Stadtmuller. Dec., 1894.
27. Grain, thick and thin seeding; potatoes; different dates of planting. By R. H. McDowell. Dec., 1894.
28. An important elm insect. By F. H. Hillman. Nov., 1895.
29. The San José scale. By F. H. Hillman. Dec., 1895.
30. Wheat: Cutting at different dates. By R. H. McDowell. Dec., 1895
31. Texas cattle fever. By W. M. Miller. Dec., 1895.
32. Sugar beets. By N. E. Wilson. Dec., 1896.
33. Field notes on some Nevada grasses. By F. H. Hillman. Nov.,
34. Drinking water. By N. E. Wilson. Dec., 1896.
35. Hops. By R. H. McDowell. Dec., 1896.
35. [i. e. 36]. Some common injurious insects of western Nevada. By F. H. Hillman. Dec., 1897.
37. Sugar beets: Notes for 1897. By R. H. McDowell and N. E. Wilson. Dec., 1897.
38. Nevada weeds, III. By F. H. Hillman. 1897.
39. Some Nevada soils. By N. E. Wilson. Dec., 1897.
40. Pig feeding. By R. H. McDowell. Dec., 1898.
41. Steer feeding. By R. H. McDowell. Dec., 1898.
42. Nevada butters. By N. E. Wilson. Dec., 1898.
43. Sugar beets: Notes for 1898. By R. H. McDowell and N. E. Wilson. Dec., 1898.
44. Sugar beets, season of 1899, [Pt. I]. By R. H. McDowell and N. E. Wilson. Dec., 1898.
45. Nature studies: I, Twigs of common trees and shrubs. By F. H. Hillman. Dec., 1898.
46. Nature studies: II, Flowers and fruits of common trees and shrubs. By F. H. Hillman. June, 1900.
47. Clover seeds and their impurities. By F. H. Hillman. Aug., 1900.
48. Nature studies: III, Some ways of seed distribution. By F. H. Hillman. June, 1900.
49. The carpenter worm. By S. B. Doten. Sept., 1900.
50. Sugar beets, season of 1899, [Pt. II.] By R. H. McDowell. Dec., 1900.
51. A preliminary report on the summer ranges of western Nevada sheep. By P. B. Kennedy and S. B. Doten. Dec., 1901.
52. Water supply and irrigation in Nevada. By L. H. Taylor. June, 1902.
53. The burning of dead animals. By R. H. McDowell. June. 1902.
54. Report of irrigation investigations, Humboldt River Valley, Nevada. By J. D. Stannard. 1901.
55. Summer ranges of eastern Nevada sheep. By P. B. Kennedy. Nov., 1903.
56. Crickets: The western cricket (*Anabrus simplex*). By S. B. Doten. Jan., 1904.

57. Grasshoppers in alfalfa fields. By S. B. Doten. Jan., 1904.
58. Ground squirrels and other rodent pests in Nevada. By Peter Frandsen. Mar., 1905.
59. An account of some features of the climate of Reno, Nev. By S. B. Doten. June, 1905.
60. The weather of 1905. By S. B. Doten. Apr., 1906.
61. Ornamental and shade trees. By P. B. Kennedy. June, 1906.
62. Native forage plants and their chemical composition. [By N. E. Wilson, S. C. Dinsmore, and P. B. Kennedy]. June, 1906.
63. Annual report of the board of control, the director [J. E. Stubbs] and members of the station staff for the fiscal year ending June 30th, 1907. Dec., 1907.
64. Digestion experiments with native hay. By S. C. Dinsmore and P. B. Kennedy. Sept., 1907.
65. The European elm scale (*Gossyparia spuria* Modeer). By S. B. Doten. Feb., 1908.
66. Annual report of the board of control, the director [J. E. Stubbs], and the members of the station staff for the fiscal year ending June 30, 1908. Dec., 1908.
67. The Mount Rose weather observatory, 1906–7, with notes on the progress of the observatory 1907–8. By J. E. Church. June, 1908.
68. Equine anemia: An account of a recent inquiry into the nature and cause of an obscure and fatal disease among horses in eastern Nevada. By W. B. Mack. Mar., 1909.
69. A report on irrigation laws and litigation in Nevada. By Henry Thurtell and G. H. True. July, 1909.
70. Food and drug inspection. May, 1909.
71. Digestion experiments on the range. By P. B. Kennedy and S. C. Dinsmore. Aug., 1909.
72. Annual report of the board of control, the director [J. E. Stubbs], and the members of the station staff for the fiscal year ending June 30, 1909. Dec., 1909.
73 A neglected field in photo-micrography. By S. B. Doten. Aug., 1910.
73½. Annual report of the board of control, the director [J. E. Stubbs], and the members of the station staff for the fiscal year ending June 30, 1910. Dec., 1910.
74. First annual report of the department of food and drugs inspection for the year ending Dec. 31, 1910. By S. C. Dinsmore. Jan., 1911.
75. The sugar beet industry in Nevada. By C. S. Knight. Mar., 1911.
76. The potato eelworm. By S. B. Doten and Peter Frandsen. Mar., 1911., also Italian translation.
77. Fixing standard weights and measures. May, 1911.
78. Concerning the relation of food to reproductive activity and longevity in certain hymenopterous parasites. By S. B. Doten. Sept., 1911.
79. The avoidance and prevention of frost in the fruit belts of Nevada. By J. E. Church, jr. and S. P. Fergusson. Jan., 1912.
80. Food and drug and weight and measures laws of the State of Nevada, with the rules and regulations adopted for the enforcement of the same. Nov., 1913.
81. Water hemlock (Cicuta). By C. A. Jacobson. Mar., 1915.
82. The control of contagious epithelioma in chickens by vaccination. By W. B. Mack and Edward Records. June, 1915. See 84.
83. The value of high-level meteorological data in forecasting changes of temperature: A contribution to the meteorology of Mount Rose, Nevada. By S. P. Fergusson. June 24, 1915.
84. Contagious epithelioma in chickens (chicken pox, swelled head): Its control by vaccination, a popular abstract of Bulletin 82, amplified and illustrated. By W. B. Mack and Edward Records. Apr., 1916. A "popular abstract" of 82.
85. The use of bacterins in the control of fowl cholera. By W. B. Mack and Edward Records. Dec., 1916.
86. Forage and root crops. By C. S. Knight. Apr., 1917.
87. Home potato patches. By C. S. Knight. Apr., 1917. See 90.
88. Field crops for late planting. By C. S. Knight. Apr., 1917.
89. Grain production in Nevada. By C. S. Knight. Oct., 1917.
90. Potato culture in Nevada. By C. S. Knight. Feb., 1918. An expansion of 87.
91. Silage crops for Nevada. By C. S. Knight. Feb., 1918.
92. Irrigation of wheat in Nevada. By C. S. Knight. [Feb., 1918.]
93. Irrigation of alfalfa in Nevada. By C. S. Knight. Apr., 1918.
94. One-night camps versus established bed grounds on Nevada sheep ranges. By C. E. Fleming. June, 1918.
95. Range plants poisonous to sheep and cattle in Nevada. By C. E. Fleming.—Spanish translation. By B. F. Schapelle. July, 1918.
96. Irrigation of field crops in Nevada. By C. S. Knight and George Hardman. 1919.
97. Don't feed fox-tail hay to lambing ewes. By C. E. Fleming and N. F. Peterson. Aug., 1919.
98. Arrow grass, a new stock-poisoning plant (*Triglochin maritima*). By C. E. Fleming [and others]. Jan., 1920.
99. The narrow-leaved milkweed (*Asclepias mexicana*) and the broad-leaved or showy milkweed (*Asclepias speciosa*), plants poisonous to live stock in Nevada. By C. E. Fleming [and others]. Dec., 1920.
100. The poison parsnip or water hemlock (*Cicuta occidentalis*), a plant deadly to live stock in Nevada. By C. E. Fleming [and others]. Dec., 1920.

NEW HAMPSHIRE.

New Hampshire College Agricultural Experiment Station, Durham.

BULLETINS.

1. Ensilage. By G. H. Whitcher. Apr., 1888.
2. Feeding experiments. [By G. H. Whitcher.] June, 1888.
3. When to cut corn for ensilage. By G. H. Whitcher. July, 1888
4. The science and practice of stock feeding. By G. H. Whitcher. Nov., 1888. See 127.
5. Fertilizers and fertilizing materials. By G. H. Whitcher. Mar., 1889.
6. Experiments with fertilizers. By G. H. Whitcher. Apr., 1889.
7. Test of dairy apparatus. By G. H. Whitcher. May, 1889.
8. Feeding experiments. By G. H. Whitcher. Nov., 1889.
9. Effect of food upon milk. By G. H. Whitcher. Feb., 1890.
10. Cooperative fertilizer experiments: Comparison of manure, prepared fertilizer, ashes, and chemicals. By G. H. Whitcher. Mar., 1890.
11. Pig feeding experiments: Results of feeding skim-milk and corn meal versus corn meal and middlings. By G. H. Whitcher.—Digestion experiments. F. W. Morse. Nov., 1890.
12. Fertilizer experiments. By G. H. Whitcher. Mar., 1891.
13. Effect of food on butter. By A. H. Wood and C. L. Parsons.—Effect of food on quantity of milk. By G. H. Whitcher. May, 1891.
14. Ensilage in dairy farming. By G. H. Whitcher. May, 1891.

15. Patent cattle-foods: [Introduction.] By G. H. Whitcher.—Chemical composition. By F. W. Morse. Dec., 1891.
16. Effect of food on composition of butter fat. By F. W. Morse. Sept., 1892.
17. Stock feeders' guide, with chart for use in barn. By G. H. Whitcher. Oct., 1892. Includes a partial reprint of 4; See 127.
18. Effect of food on milk. By A. H. Wood. Nov., 1892.
19. Spraying apples and pears against fungi. By H. H. Lamson. Feb., 1894.
20. Effect of food on milk: Feeding with fats. By A. H. Wood. Mar., 1894.
21. Farm yard manures and artificial fertilizers. By G. H. Whitcher. Apr., 1894.
22. Prevention of potato blight. By H. H. Lamson. May, 1894.
23. Some dangerous fruit insects. By C. M. Weed. Nov., 1894.
24. The flow of maple sap. By A. H. Wood. Feb., 1895.
25. The composition of maple sap. By F. W. Morse and A. H. Wood. Mar., 1895.
26. Analyses of fertilizers and wood ashes. By F. W. Morse. Mar., 1895.
27. Spraying experiments in 1894. By H. H. Lamson. Apr., 1895.
28. Remedies for the horn fly. By C. M. Weed. June, 1895.
29. Remedies for flea beetles. By C. M. Weed. June, 1895.
30. An experiment in road making. By C. H. Pettee. July, 1895.
31. Seventh annual report, [1895]. By C. S. Murkland. Nov., 1895.
32. Studies of maple sap. By F. W. Morse. Sept., 1895.
33. Two shade-tree pests. By C. M. Weed. Nov., 1895.
34. Surface and sub-irrigation out of doors. By F. W. Rane. Agr., 1896.
35. The codling moth and the apple maggot. By C. M. Weed. May, 1896.
36. Analyses of three common insecticides. By F. W. Morse. June, 1896.
37. Crimson clover. By F. W. Rane. July, 1896.
38. The tent caterpillar. By C. M. Weed. Aug., 1896.
39. The army worm. By C. M. Weed. Sept., 1896.
40. Eighth annual report, [1896]. By C. S. Murkland. Nov., 1896.
41. Potatoes: Varieties, fertilizers, and scab. By F. W. Rane and Leigh Hunt. Jan., 1897.
42. Tomato growing in New Hampshire. By F. W. Rane and Leigh Hunt.—Notes on tomato breeding. By F. W. Rane. Feb., 1897.
43. Some inferior wood ashes. By F. W. Morse. Feb., 1897.
44. The canker-worm. By C. M. Weed. Apr., 1897.
45. Fruit and potato diseases. By H. H. Lamson. May, 1897.
46. An experiment with a steam drill; methods of road maintenance. By C. G. Pettee. Aug., 1897.
47. Strawberries in New Hampshire. By F. W. Rane. Oct., 1897.
48. Ninth annual report [1897]. By C. S. Murkland. Nov., 1897.
49. The inspection of fertilizers in 1897. By F. W. Morse. Jan., 1898.
50. Dehorning cattle: I, Experience with the college herd. By F. W. Rane.—II, Preventing the growth of horns. By H. H. Lamson. Feb., 1898.
51. Sweet corn for New Hampshire. By F. W. Rane. Mar., 1898.
52. Growing muskmelons in the North. By F. W. Rane. Apr., 1898.
53. The farm water supply. By F. W. Morse. May, 1898.
54. The winter food of the chickadee. By C. M. Weed. June, 1898.
55. The feeding habits of the chipping sparrow. By C. M. Weed. July, 1898.
56. Poisonous properties of wild cherry leaves. By F. W. Morse and C. D. Howard. Aug., 1898.
57. Experiments with roots and forage crops. By F. W. Rane. Sept., 1898.
58. The cost of raising calves. By F. W. Morse. Oct., 1898.
59. Tenth annual report [1898]. By C. S. Murkland. Nov., 1898.
60. Green corn under glass. By F. W. Rane. Jan., 1899.
61. The inspection of fertilizers in 1898. By F. W. Morse. Feb., 1899.
62. Forcing pole beans under glass. By F. W. Rane. Feb., 1899.
63. Third potato report. By F. W. Rane. Mar., 1899.
64. The forest tent caterpillar. By C. M. Weed. Apr., 1899.
65. Notes on apple and potato diseases in 1898. By H. H. Lamson. May, 1899.
66. Experiments in pig feeding. By C. W. Burkett. Sept., 1899.
67. The spiny elm caterpillar. By C. M. Weed. Oct., 1899.
68. Eleventh annual report [1899]. By C. S. Murkland. Nov., 1899.
69. The inspection of fertilizers in 1899. By F. W. Morse. Jan., 1900.
70. Experiments with muskmelons. By F. W. Rane. Jan., 1900.
71. Corn culture. By C. W. Burkett. Feb., 1900.
72. Insect record for 1899. By C. M. Weed. Feb., 1900.
73. Experiments with tomatoes and potatoes. By F. W. Rane. Mar., 1900.
74. Growing strawberries in New England. By F. W. Rane. Apr., 1900.
75. The forest tent caterpillar. Second report. By C. M. Weed. May, 1900.
76. Utilizing the grreenhouse in summer. By F. W. Rane. June, 1900.
77. Experiments in road surfacing. By C. H. Pettee. Sept., 1900.
78. Bovine tuberculosis. By H. H. Lamson. Oct., 1900.
79. Twelfth annual report [1900]. By C. S. Murkland. Nov., 1900.
80. The inspection of fertilizers in 1900. By F. W. Morse. Jan., 1901.
81. Insect record for 1900. By C. M. Weed. Feb., 1901.
82. Feeding farm horses. By C. W. Burkett. July, 1901.
83. The value of meadow muck. By F. W. Morse. Aug., 1901.
84. Forcing dwarf tomatoes under glass. By F. W. Rane. Sept., 1901.
85. Remedies for the canker-worm. By C. M. Weed. Oct., 1901.
86. Growing watermelons in the North; classification of watermelons. By F. W. Rane. Nov., 1901.
87. Thirteenth annual report [1901]. By C. S. Murkland. Nov., 1901.
88. Inspection of fertilizers in 1901; analyses of wood ashes and miscellaneous fertilizing materials. By F. W. Morse. Jan., 1902.
89. The squash bug. By C. M. Weed and A. F. Conradi. Feb., 1902.
90. Insect record for 1901. By C. M. Weed. Mar., 1902.
91. Killing woodchucks with carbon bisulphid. By C. M. Weed. May, 1902.
92. Silage studies. By F. W. Morse. Sept., 1902.
93. The cold storage of apples: Apples in cold storage. By F. W. Rane.—Influence of cold storage on the decay of apples; effect of wrapping apples in paper. By H. H. Lamson.—Chemical changes in apples during storage. By F. W. Morse. Oct., 1902.
94. Remedies for fleas. By A. F. Conradi. Oct., 1902.
95. How to grow a forest from seed. By F. W. Rane. Nov., 1902.
96. Fourteenth annual report [1902]. By F. W. Morse [and others]. Nov., 1902.

97. Inspection of fertilizers in 1902; analyses of wood ashes and miscellaneous fertilizing materials. By F. W. Morse. Jan., 1903.
98. The inspection of feeding stuffs in 1902. By F. W. Morse. Feb., 1903.
99. A selected list of vegetables for the garden. By F. W. Rane. Mar., 1903.
100. The white-fly of greenhouses. By C. M. Weed and A. F. Conradi. Mar., 1903.
101. Fungous diseases and spraying. By H. H. Lamson. Apr., 1903.
102. Insect record for 1902. By C. M. Weed. May, 1903.
103. Standard milk. By F. W. Morse. Oct., 1903.
104. Fifteenth annual report [1903]. By F. W. Morse [and others]. Nov., 1903.
105. Fruit growing, with a selected list of varieties for New Hampshire. By F. W. Rane. Jan., 1904.
106. Forestry: How to make a beginning; Waste lands: How to convert them into forests. By F. W. Rane. Feb., 1904.
107. Brown-tail moth in New Hampshire. By C. M. Weed. Feb., 1904.
108. Inspection of fertilizers in 1903; analyses of wood ashes and miscellaneous fertilizing materials. By F. W. Morse. Mar., 1904.
109. The pernicious or San José scale insect in New Hampshire. By C. M. Weed. Mar., 1904.
110. Experiments in orchard management in New England. By F. W. Rane. Mar., 1904.
111. Ten experiments with potatoes and potato culture for New England. By F. W. Rane and H. F. Hall. Apr., 1904.
112. Experiments in destroying black flies. By C. M. Weed. May, 1904.
113. Corn meal, middlings, and separator skim milk for fattening pigs. By E. L. Shaw. Oct., 1904.
114. The Babcock test for New Hampshire farmers. By I. C. Weld. Nov., 1904.
115. Sixteenth annual report [1904]. By W. D. Gibbs [and others]. Dec., 1904.
116. The inspection of feeding stuffs in 1904. By F. W. Morse. Jan., 1905.
117. Inspection of fertilizers in 1904. By F. W. Morse. Jan., 1905.
118. Tile drainage. By F. W. Taylor. Mar., 1905.
119. Forestry: The value of native pine seedlings; experiments, digging, packing and transplanting; comparative expense, wild seedlings vs. nursery purchased stock. By F. W. Rane. Mar., 1905.
120. The dairy industry in New Hampshire. By I. C. Weld. Sept., 1905.
121. The gypsy moth in New Hampshire. By E. D. Sanderson. Dec., 1905.
122. The brown-tail moth in New Hampshire. Second report. By E. D. Sanderson. Feb., 1906.
123. Inspection of fertilizers in 1905. By F. W. Morse. Feb., 1906.
124. The inspection of feeding stuffs in 1905. By F. W. Morse. Mar., 1906.
125. Vegetable novelties. By F. W. Rane and H. F. Hall. Mar., 1906.
126. The care of composite milk samples. By I. C. Weld. Apr., 1905 [i. e. 1906].
127. The feeding of farm stock. By F. W. Taylor. Sept., 1906. Supersedes 4 and 17.
128. The brown-tail moth and the gipsy moth in New Hampshire in 1906. By E. D. Sanderson and L. O. Howard. Jan., 1907.
129. Seventeenth and eighteenth annual reports [1905–1906]. By W. D. Gibbs [and others]. Jan., 1907.
130. Inspection of fertilizers in 1906. By F. W. Morse. Feb., 1907.
131. Spraying the apple orchard. By E. D. Sanderson, T. J. Headlee, and Charles Brooks. Apr., 1907. See also 143.
132. A plan for improving the quality of milk and cream furnished to New Hampshire creameries. By I. C. Weld. May, 1907.
133. The inspection of feeding stuffs in 1907. By F. W. Morse. Nov., 1907.
134. Fertilizer analyses. By F. W. Morse and B. E. Curry. Dec., 1907.
135. The respiration of apples and its relation to their keeping. By F. W. Morse. Feb., 1908.
136. The gipsy and brown-tail moths in New Hampshire. By E. D. Sanderson. Feb., 1908.
137. Strawberries for New Hampshire. By H. F. Hall. May, 1908.
138. Humus in New Hampshire soils. By F. W. Morse. June, 1908.
139. Caterpillars injuring apple foliage in late summer. By E. D. Sanderson. July, 1908.
140. Analyses of feeding stuffs and fertilizers, 1908. By F. W. Morse and B. E. Curry. Dec., 1908.
141. A study of farm buttermaking in New Hampshire. By Fred Rasmussen. Sept., 1909.
142. The availability of the soil potash in clay and clay loam soils. By F. W. Morse and B. E. Curry. Dec., 1909.
143. The codling moth and how to control it by spraying. By E. D. Sanderson. Dec., 1909. Gives practical results of experiments reported in 131.
144. Some apple diseases. By Charles Brooks. Dec., 1909. See 157.
145. Variety tests of oats, barley, wheat, and rye. By F. W. Taylor. Dec., 1909.
146. Analyses of fertilizers made for the State board of agriculture, 1909. By B. E. Curry. Dec., 1909.
147. Analyses of feeding stuffs made for the State board of agriculture, 1909. By F. W. Morse and B. E. Curry. Dec., 1909.
148. Results of seed tests for 1910 made for the State board of agriculture. By F. W. Taylor. Sept., 1910.
149. Results of the feed inspection for 1910 made for the State board of agriculture. By B. E. Curry and T. O. Smith. Oct., 1910.
150. Results o fthe fertilizer inspection for 1910 made for the State board of agriculture. By B. E. Curry and T. O. Smith. Dec., 1910.
151. Twenty-first and twenty-second reports [1909–10]. By J. C. Kendall [and others]. Nov. 1, 1910. Some copies issued without p. 49–72, Meteorological Record.
152. Feeding sheep and lambs: Clover hay versus native hay; turnips versus dry ration. By T. R. Arkell. Jan., 1911.
153. Fruit bud formation: Progress of investigations in 1908, 1909, 1910. By B. S. Pickett. June, 1911.
154. The feeding-stuffs inspection for 1911 made for the State board of agriculture. By B. E. Curry and T. O. Smith. Oct., 1911.
155. The fertilizer inspection for 1911 made for the State board of agriculture. By B. E. Curry and T. O. Smith. Dec., 1911.
156. Results of seed tests for 1911 made for the State board of agriculture. By F. W. Taylor. Feb., 1912.
157. Some apple diseases and their treatment. By Charles Brooks. Apr., 1912. A revision of 144.
158. The feeding-stuffs inspection for 1912 made for the State board of agriculture. By B. E. Curry and T. O. Smith. Apr. 1912.
159. Fertilizers for carnations. By David Lumsden. Apr., 1912.
160. Some data on the inheritance of horns in sheep. By T. R. Arkell. May, 1912.
161. Fungicides in the apple orchard. By Charles Brooks. July, 1912.
162. The fertilizer inspection for 1912 made for the State board of agriculture. By B. E. Curry and T. O. Smith. Sept., 1912.
163. Twenty-third and twenty-fourth reports [1911–12]. By [J. C. Kendall and others.] Nov. 1, 1912.
164. Results of seed tests for 1912 made for the State board of agriculture. By F. W. Taylor. Feb., 1913.
165. The feeding-stuffs inspection for 1913 made for the State board of agriculture. By B. E. Curry and T. O. Smith. Mar., 1913.

166. Results of seed tests for 1913 made for the State board of agriculture. By F. W. Taylor and Frank App. Sept., 1913.
167. The fertilizer inspection for 1913 made for the department of agriculture. By B. E. Curry and T. O. Smith. Dec., 1913.
168. The effects of fertilizers in a cultivated orchard. By J. H. Gourley. Jan., 1914.
169. Analysis of feeding-stuffs made for the State department of agriculture. By B. E. Curry and T. O. Smith. July, 1914.
170. Granitic soil potassium and its relation to the production of hay. By B. E. Curry and T. O. Smith. May, 1914.
171. The apple maggot. By W. C. O'Kane. July, 1914.
172. Mendelism in melons. By David Lumsden. June, 1914.
173. The fertilizer inspection for 1914 made for the State department of agriculture. By B. E. Curry and T. O. Smith. Sept., 1914.
174. Results of seed tests for 1914 made for the State department of agriculture. By F. W. Taylor. Sept., 1914.
175. Analysis of feeding-stuffs made for the State department of agriculture. By B. E. Curry and T. O. Smith. Mar., 1915.
176. The fertilizer inspection for 1915 made for the State department of agriculture. By B. E. Curry and T. O. Smith. Sept., 1915.
177. Results of seed tests for 1915 made for the State department of agriculture. By F. W. Taylor and F. S. Prince. Sept., 1915.
178. Analysis of feeding-stuffs made for the State department of agriculture. By B. E. Curry and T. O. Smith. Mar., 1916.
179. Analysis of fertilizers for 1916 made for the State department of agriculture. By B. E. Curry and T. O. Smith. Sept., 1916.
180. Results of seed tests for 1916 made for the State department of agriculture. By F. W. Taylor and F. S. Prince. Sept., 1916.
181. The soy bean in New Hampshire. By F. S. Prince. Mar., 1917.
182. Cost of raising beef cattle in New Hampshire. By E. G. Ritzman. Apr., 1919.
183. Arsenical residues after spraying: Residues of lead arsenate on fruit and vegetables; toxic properties of lead arsenate, and solubility in human gastric juice: experiments with calves, sheep, and poultry. By W. C. O'Kane, C. H. Hadley, jr., and W. A. Osgood. June, 1917.
184. Analysis of feeding stuffs made forthe State department of agriculture. By B. E. Curry and T. O. Smith. Aug., 1917.
185. Analysis of fertilizers for 1917 made for the State department of agriculture. By B. E. Curry and T. O. Smith. Aug., 1917.
186. Results of seed tests for 1917 made for the State department of agriculture. By F. W. Taylor and F. S. Prince. Sept., 1917.
187. Analysis of feeding stuffs made for the State department of agriculture. By B. E. Curry and T. O. Smith. Aug., 1918.
188. Results of seed tests for 1918 made for the State department of agriculture. By F. W. Taylor. Aug., 1918.
189 Analysis of fertilizers for 1918 made for the State department of agriculture. By B. E. Curry and T. O. Smith. Aug., 1918.
190. Sod, tillage, and fertilizers for the apple orchard: A ten-year summary. By J. H. Gourley. Jan. 1919.
191. Inspection of commercial feeding stuffs made for the State department of agriculture. By T. O. Smith. June, 1919.
192. Report of the New Hampshire Agricultural Experiment Station for the fiscal year ending June 30, 1918. By J. G. Kendall. June, 1919.
193. Results of seed tests for 1919 made for the State department of agriculture. By F. W. Taylor. Aug., 1919.
194. Inspection of commercial fertilizers for 1919 made for the State department of agriculture. By T. O. Smith. Sept., 1919.
195. Inspection of commercial feeding stuffs made for the State department of agriculture. By H. R. Kraybill and T. O. Smith. Sept., 1920.
196. Inspection of commercial fertilizers for 1920 made for the State department of agriculture. By H. R. Kraybill T. O. Smith, and C. P. Spaeth. Nov., 1920.
197. Results of seed tests for 1920 made for the State department of agriculture. By M. G. Eastman. Dec., 1920.

TECHNICAL BULLETINS.

1. An annotated catalogue of the butterflies of New Hampshire. By W. F. Fiske. 1901.
2. The classification of American muskmelons. By F. W. Rane. Mar., 1901.
3. The food of the myrtle warbler. By C. M. Weed and Ned Dearborn. Nov., 1901.
4. Effect of acetylene gaslight on plant growth. By F. W. Rane. Oct., 1902.
5. A partial bibliography of the economic relations of North American birds. By C. M. Weed. 1902.
6. A study of the parasites of the American tent caterpillar. By W. F. Fiske. 1903.
7. The relation of temperature to insect life: 1, The variation in velocity of development at different constant temperatures. By E. D. Sanderson and L. M. Peairs. Dec., 1913.
8. Bordeaux mixture: 1, Physio-chemical studies. By O. Butler. June, 1914.
9. Studies in fruit bud formation. By J. H. Gourley. Jan., 1915.
10. The nature of the inflorescence and fruit of *Pyrus malus*. By Caroline A. Black. Aug., 1916.
11. Notes on the presence of nitrates in orchard soils. By J. H. Gourley and V. D. Shunk. Oct., 1916.
12. Some observations on the growth of apple trees. By J. H. Gourley. July, 1917.
13. Physiology of the apple: Distribution of food materials in the tree at different periods of vegetation. By O. R. Butler, T. O. Smith, and B. F. Curry. Dec., 1917.
14. Some fundamental factors that determine progress in farm sheep breeding. By E. G. Ritzman. Apr., 1919.
15. A comparison of some traits of conformation of Southdown and Rambouillet sheep and of their F_1 hybrids, with preliminary data and remarks on variability in F_2. By E. G. Ritzman and C. B. Davenport. Apr., 1920.
16. A respiration chamber for large domestic animals. By F. G. Benedict, W. E. Collins, Mary F. Hendry, and Alice Johnson. Apr., 1920.

INDEX.

Index to the publications of the New Hampshire Agricultural Experiment Station, 1888–1908, Bulletins 1 to 140, Reports 1 to 20. (In nineteenth and twentieth reports for 1907–1908, p. 503–680.)

NEW JERSEY.

New Jersey State Agricultural Experiment Station, New Brunswick.
New Jersey Agricultural College Experiment Station, New Brunswick.

BULLETINS.

1. Suggestions in regard to the cranberry rot and its cure. May 17, 1880.
2. [Raspberry disease and suggestions for overcoming it.] By G. H. Cook. [June 4, 1880.]
3. Analyses of land plaster. By G. H. Cook. [June 25, 1880.]
4. [Analyses of guanos, superphosphates, and special manures.] By G. H. Cook. July 3, 1880.
5. Analyses of bone dust. Aug. 9, 1880.
6. [Analyses of fertilizers. Aug. 16, 1880.]
7. [Analyses of fertilizers.] By G. H. Cook. [Aug. 28, 1880.]
8. [Analyses of fertilizers.] By G. H. Cook. Sept. 6, 1880.
9. [Analyses of fertilizers. By G. H. Cook.] Oct. 16, 1880.
10. [Rational system of feeding milch cows.] By G. H. Cook. Jan. 15, 1881.

Buls. 1–10 were issued originally in the form of newspaper slips. The reprint of 1916 combines them in a single pamphlet, supplying titles and dates lacking in the original issues.

11. Ensilage. By G. H. Cook. Mar. 7, 1881.
12. Valuation of fertilizers. By G. H. Cook. Mar. 30, 1881.
13. Land plaster; ground bone. By G. H. Cook. May, 5 1881.
14. Clover seed midge. By G. H. Cook. May 26, 1881.
15. Commercial fertilizers, their composition and valuations. By G. H. Cook. July 18, 1881.
16. Commercial fertilizers. By G. H. Cook. Sept. 20, 1881.
17. Commercial fertilizers. By G. H. Cook. Nov. 12, 1881.
18. Sorghum sugar cane. By G. H. Cook. Dec. 20, 1881.
19. Green fodder corn; dried fodder corn: ensilage. By G. H. Cook. Feb. 20, 1882.
20. Valuation of fertilizers. By G. H. Cook. Mar. 30, 1882.
21. Chemical fertilizers, incomplete: Analyses and retail cash prices. By G. H. Cook. July 10, 1882
22. Chemical fertilizers, complete and incomplete. By G. H. Cook. July 28, 1882.
23. Commercial fertilizers. By G. H. Cook. Oct. 10, 1882.
24. Sorghum: Feeding experiments with sorghum seed. By G. H. Cook. Nov. 25, 1882.
25. Sorghum and sugar: Experiments and investigations of 1882. By G. H. Cook. Dec. 8, 1882.
26. Field experiments. By G. H. Cook. Jan. 4, 1883.
27. Prices of nitrogen, phosphoric acid, and potash, and analysis of incomplete fertilizers. By G. H. Cook. Apr. 21, 1883.
28. Analyses and valuations of complete manures and special fertilizers. By G. H. Cook. July 2, 1883.
29. Analyses and valuations of nitrogenous superphosphates, ground bones, plain superphosphates, poudrettes, and miscellaneous fertilizers.] By G. H. Cook. Aug. 2, 1883.
30. Results of field and laboratory experiments with sorghum for the season of 1883. By G. H. Cook. Nov. 16, 1883.
31. Nitrate of soda or Chili saltpeter as a top dressing for wheat. By G. H. Cook. Dec. 22, 1883.
32. Prices of nitrogen, phosphoric acid, and potash. By G. H. Cook. Mar. 28, 1884.
33. Analyses and valuations of complete fertilizers. By G. H. Cook. Aug. 2, 1884.
34. [Analyses and valuations of incomplete fertilizers.] By G. H. Cook. Sept. 27, 1884.
35. [Meaning of station's valuations, schedule of trade values for 1885, and chemical composition, retail prices, and guaranteed analyses of fertilizer supplies.] By G. H. Cook. July 1, 1885.
36. Analyses and valuations of complete fertilizers. By G. H. Cook. Oct. 2, 1885.
37. Miscellaneous fertilizers. By G. H. Cook. Dec. 7, 1885.
38. The Rio Grande sorghum sugar works. By G. H. Cook. Dec. 21, 1885.
39. [Meaning of stations' valuations; schedule of trade values for 1886.] By G. H. Cook. Mar. 19, 1886.
40. Analyses and valuations of complete fertilizers. By G. H. Cook. Oct. 16, 1886.
41. The extraction of sugar from sorhgum at Rio Grande, Cape May County, New Jersey. Jan. 22, 1887.
42. Analyses and valuations of complete fertilizers. By G. H. Cook. Sept. 3, 1887.
43. Analyses and valuations of complete fertilizers, of ground bone, and of miscellaneous material. By G. H. Cook. Dec. 31, 1887.
44. Sorghum and sugar making: [Introduction]. G. H. Cook.—The sorghum sugar industry, a report upon experiments made at Rio Grande during the season of 1887. By A. T. Neale. Mar. 8, 1888.
45. Prices of nitrogen, phosphoric acid, and potash. By G. H. Cook. Mar. 10, 1888.
46. Insect pests and the means for destroying them. By G. D. Hulst. May 23, 1888.
47. [Analyses and valuations of incomplete fertilizers.] By G. H. Cook. June 23, 1888.
48. Analyses and valuations of complete fertilizers. By G. H. Cook. Aug. 7, 1888.
49. Analyses and valuations of complete fertilizers, ground bone, and miscellaneous samples of other fertilizing materials. By G. H. Cook. Nov. 10, 1888.
50. Insects injurious to the cabbage and the best means of preventing their ravages. By G. D. Hulst. Dec. 5, 1888.
51. Sorghum and sugar making: [Introduction]. By G. H. Cook.—The sorghum sugar industry, a report upon experiments made at Rio Grande during the season of 1888. By A. T. Neale. Dec. 31, 1888.
52. What are the worst weeds of New Jersey? By B. D. Halsted. Mar. 20. 1889.
53. Prices of nitrogen, phosphoric acid, and potash. By G. H. Cook. Mar. 26, 1889.
54. Potash as a fertilizer. By E. B. Voorhees. Mar. 27, 1889.
55. Entomological suggestions and inquiries. By J. B. Smith. Mar. 28, 1889.
56. Analyses and valuations of complete fertilizers. By G. H. Cook. July 15, 1889.
57. Experiments with different breeds of dairy cows. By G. H. Cook. July 31, 1889.
58. Analyses of incomplete fertilizers. By G. H. Cook. Aug. 5, 1889.
59. Analyses and valuations of complete fertilizers. By E. B. Voorhees. Sept. 23, 1889.
60. Ground bones and miscellaneous samples. By E. B. Voorhees. Oct. 30, 1889.
61. Experiments with different breeds of dairy cows. By M. E. Gates. Oct. 31, 1889.
62. The horn fly (*Haematobia serrata*). By J. B. Smith. Nov. 6, 1889.
63. Experiments on tomatoes. By E. B. Voorhees. Dec. 30, 1889.
64. Some fungus diseases of the cranberry. By B. D. Halsted. Dec. 31, 1889.
65. Experiments with different breeds of dairy cows. By M. E. Gates. Jan. 31, 1890.
66. Fertilizing materials. By E. B. Voorhees. Mar. 1, 1890.
67. Note on the wheat louse. By J. B. Smith. May 3, 1890.
68. Experiments with different breeds of dairy cows. By M. E. Gates. Apr. 30, 1890.
69. Analyses and valuations of complete fertilizers. By E. B. Voorhees. July 15, 1890.
70. Some fungous diseases of the spinach. By B. D. Halsted. July 26, 1890.
71. Analyses of incomplete fertilizers and the value of home mixtures. By E. B. Voorhees. Aug. 14, 1890.
72. Plant lice and how to deal with them. By J. B. Smith. Oct. 4, 1890.

73. Analyses and valuations of complete fertilizers. By E. B. Voorhees. Oct. 6, 1890.
74. Ground bones and miscellaneous samples. By E. B. Voorhees. Oct. 21, 1890.
75. Insecticides and how to apply them; experiment record for 1890. By J. B. Smith. Nov. 7, 1890.
76. Some fungous diseases of the sweet potato. By B. D. Halsted. Nov. 28, 1890.
77. Experiments with different breeds of dairy cows. By James Neilson. Dec. 11, 1890.
78. Destroy the black knot of plum and cherry trees: An appeal. By B. D. Halsted. Jan. 30, 1891.
79. Experiments with nitrate of soda on tomatoes. By E. B. Voorhees. Feb. 28, 1891.
80. Experiments with fertilizers on potatoes and wheat. By E. B. Voorhees. Mar. 14, 1891.
81. Incomplete fertilizers and home mixtures. By E. B. Voorhees. July 1, 1891.
82. The rose chafer or "rosebug" (*Macrodactylis subspinosus*). By J. B. Smith. July 3, 1891.
83. Analyses and valuations of complete fertilizers. By E. B. Voorhees. Sept. 15, 1891.
84. Ground bone and miscellaeous samples. By E. B. Voorhees. Oct. 10, 1891.
85. Farm practice and fertilizers to control insect injury By J. B. Smith. Dec. 18, 1891.
86. Spraying for insect and fungous pests of the orchard and vineyard. By J. B. Smith and B. D. Halsted. Apr. 4, 1892.
87. Analyses of commercial feeds. By E. B. Voorhees. Apr. 13, 1892.
88. Analyses of home mixtures and incomplete fertilizers. By E. B. Voorhees. July 8, 1892.
89. Analyses and valuations of complete fertilizers and ground bone. By E. B. Voorhees. Oct. 10, 1892.
90. Grasshoppers, locusts, and crickets. By J. B. Smith. Dec. 8, 1892.
91. Some fungous diseases of the quince fruit. By B. D. Halsted. Dec. 14, 1892.
92. Feeding experiments with horses: Dried brewers' grains vs. oats. By E. B. Voorhees and L. A. Voorhees. Feb. 1, 1893.
93. Analyses and study of home-mixed fertilizers and fertilizing materials. By L. A. Voorhees and J. P. Street. July 1, 1893.
94. Insects injurious to cucurbits (melons, squashes, pumpkins, cucumbers, etc.). By J. B. Smith. July 2, 1893.
95. The periodical cicada (*Cicada septendecim* L.). By J. B. Smith. Sept. 11, 1893.
96. Cornstalks and straw as hay substitutes: A bulletin of information. By E. B. Voorhees. Oct. 14, 1893.
97. Analyses and valuations of complete fertilizers, ground bone, and miscellaneous samples. By E. B. Voorhees, L. A. Voorhees, and J. P. Street. Nov. 6, 1893.
98. Club root of cabbage and its allies. By B. D. Halsted. Dec. 9, 1893.
99. The pear midge (*Diplosis pyrivora* Riley). By J. B. Smith. Apr. 4, 1894.
100. Crimson, or scarlet clover (*Trifolium incarnatum*): Its growth, composition, and usefulness. By E. B. Voorhees. June 11, 1894.
101. The use of Koch's lymph in the diagnosis of tuberculosis of cattle. By Julius Nelson. July 2, 1894.
102. Analyses of fertilizing materials and home mixtures; the experience of farmers with home mixtures. By L. A. Voorhees and J. P. Street. July 30, 1894.
103. Some insects injurious to shade trees. By J. B. Smith. Oct. 8, 1894. See 181.
104. Analyses and valuation of complete fertilizers, ground bone, and miscellaneous samples. By E. B. Voorhees, L. A. Voorhees, and J. P. Street. Nov. 19, 1894.
105. Gluten feeds: Their source, composition, and methods of use. By E. B. Voorhees. Nov. 20, 1894.
106. The San José scale in New Jersey. By J. B. Smith. Nov. 22, 1894.
107. Some fungous diseases of beets. By B. D. Halsted. Jan. 10, 1895.
108. Field experiments with fungicides (turnips, cabbage, tomatoes, potatoes, and beans). By B. D. Halsted and J. A. Kelsey. Feb. 20, 1895.
109. Cutworms; the sinuate pear borer; the potato stalk-borer; bisulphide of carbon as an insecticide. By J. B. Smith. Feb. 28, 1895.
110. The Hessian fly (*Cecidomyia destructor* Say). By J. B. Smith. Aug. 8, 1895.
111. "Raupenleim" and "Dendrolene." By J. B. Smith. Sept. 16, 1895.
112. Field experiments with potatoes. By B. D. Halsted. Oct. 22, 1895.
113. Analyses of fertilizer supplies and home mixtures; analyses and valuations of commercial fertilizers and ground bone. By L. A. Voorhees and J. P. Street. Nov. 28, 1895.
114. Suggestions in reference to systematic methods of manuring. By E. B. Voorhees. Nov. 29, 1895.
115. Irrigation of garden crops. By B. D. Halsted and J. A. Kelsey. Nov. 30, 1895.
116. The pernicious or San José scale. By J. B. Smith. Sept. 22, 1896.
117. Analyses of fertilizer supplies and home mixtures: analyses and valuations of commercial fertilizers and ground bone. By L. A. Voorhees and J. P. Street. Nov. 28, 1896.
118. The suppression and prevention of tuberculosis of cattle and its relation to human consumption. By Julius Nelson. Nov. 30, 1896.
119. Apple growing in New Jersey. By [E. B. Voorhees]. Mar. 1, 1897.
120. Field experiments with potatoes for 1896. By B. D. Halsted. Mar. 2, 1897.
121. The harlequin cabbage bug and the melon plant louse. By J. B. Smith. Mar. 10, 1897.
122. The cost and feeding value of the dry matter of dried corn fodder and of silage. By E. B. Voorhees and C. B. Lane. Aug. 16, 1897.
123. Milk: Its value as a food, and studies which suggest a different method of sale. By E. B. Voorhees and C. B. Lane. Sept. 20, 1897.
124. Analyses of fertilizer supplies and home mixtures; analyses and valuations of commercial fertilizers and ground bone. By L. A. Voorhees and J. P. Street. Nov. 26, 1897.
125. The San José scale and how it may be controlled. By J. B. Smith. Nov. 27, 1897.
126. Small fruits. By A. T. Jordan. Nov. 29, 1897.
127. The prevalence, cause, and treatment of bovine abortion, milk fever, and garget. By Julius Nelson Nov. 30, 1897.
128. The peach borer (*Sanninoidea exitiosa* Say); experiments with hydraulic cement. By J. B. Smith. Feb. 2, 1898.
129. The asparagus rust: Its treatment and natural enemies. By B. D. Halsted. June 10, 1898.
130. Forage crops. By E. B. Voorhees and C. B. Lane. Oct. 10, 1898.
131. Feeds rich in protein; the advantage of a guaranteed composition. By E. B. Voorhees. Oct. 12, 1898.
132. Analyses of fertilizer supplies and home mixtures; analyses and valuations of commercial fertilizers and ground bone. By L. A. Voorhees and J. P. Street. Oct. 18, 1898.
133. Peach growing in New Jersey. By A. T. Jordan. Jan. 17, 1899.
134. Fermentation and germ life. By Julius Nelson. Jan. 23, 1899.
135. The poisonous plants of New Jersey. By B. D. Halsted. Feb. 8, 1899.
136. Field experiments with nitrogenous fertilizers. By E. B. Voorhees. Apr. 17, 1899.
137. Dairy experiments: The yield, composition, and cost of milk; experiments with different rations. By C. B. Lane. Aug. 30, 1899.
138. Crude petroleum as an insecticide. By J. B. Smith. Sept. 5, 1899.
139. Analyses of fertilizer supplies and home mixtures; analyses and valuations of commercial fertilizers and ground bone. By L. A. Voorhees and J. P. Street. Sept. 25, 1899.
140. Three common orchard scales. By J. B. Smith. Oct. 31, 1899.

141. Forcing tomatoes. By A. T. Jordan. Dec. 31, 1899.
142. Pear growing in New Jersey. By A. T. Jordan. Jan. 20, 1900.
143. The apple plant louse (*Aphis mali* Koch). By J. B. Smith. Mar. 8, 1900.
144. Live covers for country homes. By B. D. Halsted. June 30, 1900.
145. Analyses of fertilizer supplies and home mixtures; analyses and valuations of commercial fertilizers and ground bone. By L. A. Voorhees and J. P. Street. Oct. 1, 1900.
146. Crude petroleum versus the San José or pernicious scale. By J. B. Smith. Nov. 1, 1900.
147. The angoumois grain moth (*Sitotroga cerealella* Oliv.). By J. B. Smith. Dec. 10, 1900.
148. Alfalfa: Methods of culture and yields per acre; alfalfa protein versus purchased protein in rations for dairy cows. By E. B. Voorhees and C. B. Lane. Feb. 26, 1901.
149. Two strawberry pests. By J. B. Smith. Feb. 27, 1901.
150. Losses in farm manures; the relative usefulness of the nitrogen in fresh and leached manures; the comparative value of the nitrogen in commercial forms and in natural manures. By E. B. Voorhees. June 4, 1901.
151. Bean diseases and their remedies. By B. D. Halsted. June 1, 1901.
152. Domestic pasteurizing methods and the care of milk in the home. By Julius Nelson. June 7, 1901.
153. Concentrated feeding stuffs. By L. A. Voorhees and J. P. Street. Aug. 30, 1901.
154. Analyses of fertilizer supplies and home mixtures; analyses and valuations of commercial fertilizers and ground bone. By L. A. Voorhees and J. P. Street. Oct. 30, 1901.
155. The entomologist's experiment orchard. By J. B. Smith. Jan. 13, 1902.
156. Cattle food substitutes: A warning to feeders. By L. A. Voorhees and J. P. Street. Feb. 14, 1902.
157. Field experiments with nitrate of soda on market garden crops. By E. B. Voorhees. May 12, 1902.
158. Soiling crop experiments. By C. B. Lane. June 11, 1902.
159. The rose scale (*Diaspis rosæ* Bouché). By J. B. Smith. June 13, 1902.
160. Concentrated feeding stuffs. By L. A. Voorhees and J. P. Street. June 25, 1902.
161. Alfalfa, cowpeas, and crimson clover as substitutes for purchased feeds; home-grown protein versus purchased protein. By C. B. Lane. Aug. 30, 1902.
162. Lime, salt, and sulphur wash. By J. B. Smith. Oct. 23, 1902.
163. Analyses of fertilizer supplies, home mixtures, and special compounds; analyses and valuations of commercial fertilizers and ground bone. By L. A. Voorhees and J. P. Street. Oct. 29, 1902.
164. Field experiments with nitrate of soda on forage crops and on market garden crops. By E. B. Voorhees. June 1, 1903.
165. Concentrated feeding stuffs. By L. A. Voorhees and J. P. Street. June 15, 1903.
166. The proper disposal of sewerage wastes in rural districts. By Julius Nelson. June 27, 1903.
167. Some of the newer fungicides. By B. D. Halsted and J. A. Kelsey. June 29, 1903.
168. Analyses of fertilizer supplies, home mixtures, and special compounds; analyses and valuations of commercial fertilizers and ground bone. By J. P. Street, W. P. Allen, and V. J. Carberry. Oct. 1, 1903.
169. Insecticides and their use. By J. B. Smith. Dec. 1, 1903.
170. Experiments in crossing sweet corn: A new variety, the Voorhees Red. By B. D. Halsted and J. A. Kelsey. Feb. 5, 1904.
171. The common mosquitoes of New Jersey. By J. B. Smith. Feb. 8, 1904.
172. The use of fertilizers; a review of the results of experiments with nitrate of soda. By E. B. Voorhees. Feb. 10, 1904.
173. Experiments with manures and fertilizers on different varieties of asparagus and raspberries. By A. T. Jordan. Feb. 15, 1904.
174. Alfalfa hay, cowpea hay, and soy bean silage as substitutes for purchased feeds; cottonseed meal versus wheat bran and dried brewers' grains. By C. B. Lane. Feb. 20, 1904.
175. Concentrated feeding stuffs. By J. P. Street, W. P. Allen, and V. J. Carberry. June 1, 1904.
176. Analyses and valuations of commercial fertilizers. By J. P. Street, W. P. Allen, and V. J. Carberry. Sept. 10, 1904.
177. Analyses of fertilizer supplies, home mixtures, and special compounds; analyses and valuations of commercial fertilizers and ground bone. By J. P. Street, W. P. Allen, and V. J. Carberry. Nov. 15, 1904.
178. Insecticide experiments for 1904. By J. B. Smith. Nov. 28, 1904.
179. Free distribution of experiment station seeds. By B. D. Halsted. Dec. 20, 1904.
180. Experiments on the accumulation and utilization of atmospheric nitrogen in the soil. By E. B. Voorhees and J. G. Lipman. Mar. 1, 1905.
181. Insects injurious to shade trees and ornamental plants. By J. B. Smith. Mar. 2, 1905, supersedes 103.
182. A popular review of the work of the experiment station. By E. B. Voorhees. Mar. 3, 1905.
183. The analyses of stone lime, prepared lime, oyster-shell lime, wood ashes, and marl. By L. A. Voorhees. Mar. 4, 1905.
184. Condimental feeds and condition powders. By J. P. Street. Mar. 28, 1905.
185. Concentrated feeding stuffs. By J. P. Street, W. P. Allen, and V. J. Carberry. May 1, 1905.
186. Late fall spraying for the San José or pernicious scale. By J. B. Smith. Sept. 1, 1905.
187. Analyses and valuations of commercial fertilizers and ground bone. By J. P. Street, W. P. Allen, and V. J. Carberry. Sept. 2, 1905.
188. Analyses of fertilizer supplies, home mixtures, and special compounds; analyses and valuations of commercial fertilizers. By J. P. Street, W. P. Allen, and V. J. Carberry. Nov. 29, 1905.
189. Dried beet pulp as a substitute for corn silage; dried beet pulp versus dried molasses beet pulp; dried molasses beet pulp versus hominy meal. By G. A. Billings. Dec. 6, 1905.
190. Alfalfa: Alfalfa as a forage crop; methods of culture in New Jersey; alfalfa hay versus purchased feeds. By G. A. Billings. Dec. 20, 1905.
191. Seed distribution of 1904 and for 1905. By B. D. Halsted. Dec. 30, 1905.
192. Breeding sweet corn: cooperative tests. By B. D. Halsted. Mar. 2, 1906.
193. Concentrated feeding stuffs. By J. P. Street, W. P. Allen, V. J. Carberry. Mar. 14, 1906.
194. Spraying. By G. F. Warren. Mar. 20, 1906.
195. Analyses of Paris green. By J. P. Street. Sept. 1, 1906.
196. Analyses and valuations of commercial fertilizers; analyses of fertilizer supplies, home mixtures, and special compounds. By J. P. Street, W. P. Allen, and V. J. Carberry. Sept. 12, 1906.
197. Suggestions on the renewal of the peach industry in New Jersey. By G. F. Warren. Sept. 18, 1906.
198. Analyses and valuations of commercial fertilizers and ground bone. By J. P. Street, V. J. Carberry, and P. E. Brown. Dec. 31, 1906.
199. Station novelties in truck crops; further distribution of seeds. By B. D. Halsted. Jan. 11, 1907.
200. The cabbage and onion maggots. By J. B. Smith and E. L. Dickerson. Feb. 12, 1907.
201. Concentrated feeding stuffs. By J. P. Street, J. W. Kellogg, and V. J. Carberry. Apr. 15, 1907.
202. Forest trees of New Jersey. By B. D. Halsted. Apr. 25, 1907.
203. Some household pests. By J. B. Smith. June 3, 1907.
204. Home-grown protein versus purchased protein; distillers' grains versus gluten feed; summer silage versus soiling. By G. A. Billings. June 10, 1907.

205. Analyses of Paris green. By C. S. Cathcart. July 31, 1907.
206. Analyses and valuations of commercial fertilizers; analyses of fertilizer supplies, home mixtures and special compounds. By C. S. Cathcart, J. W. Kellogg, and V. J. Carberry. Sept. 20, 1907.
207. The New Jersey salt marsh and its improvement. By J. B. Smith. Nov. 14, 1907.
208. Analyses and valuations of commercial fertilizers and ground bone. By C. S. Cathcart, V. J. Carberry, and John Gaub. Dec. 12, 1907.
209. Novelties in vegetable fruits, general trial for 1908. By B. D. Halsted. Dec. 14, 1907.
210. Some chemical and bacteriological effects of liming. By E. B. Voorhees, J. G. Lipman, and P. E. Brown. Dec., 16, 1907.
211. Sandy soils and their improvement in the growing of forage crops. By E. B. Voorhees and J. G. Lipman. Jan. 30, 1908.
212. Concentrated feeding stuffs. By C. S. Cathcart, V. J. Carberry, and John Gaub. Apr. 8, 1908.
213. Insecticide materials and their application with suggestions for practice. By J. B. Smith. Sept. 8, 1908.
214. Analyses of Paris green and lead arsenate. By C. S. Cathcart. Sept. 21, 1908.
215. Analyses and valuations of commercial fertilizers; analyses of fertilizer supplies, home mixtures and special compounds. By C. S. Cathcart [and others]. Sept. 24, 1908.
216. The house mosquito, a city, town, and village problem. By J. B. Smith. Nov. 24, 1908.
217. Analyses and valuations of commercial fertilizers and ground bone. By C. S. Cathcart [and others]. Dec. 10, 1908.
218. Vegetable-fruit seed distribution for 1909. By B. D. Halsted. Dec. 19, 1908.
219. The first season with the peach orchard. By M. A. Blake. Feb. 1, 1909.
220. Concentrated feeding stuffs. By C. S. Cathcart, V. J. Carberry, and C. L. Pfersch. Apr. 26, 1909.
221. Investigations relative to the use of nitrogenous materials, 1898–1907. By E. B. Voorhees and J. G. Lipman. July, 1909.
222. Analyses of Paris green and lead arsenate. By C. S. Cathcart. Sept. 14, 1909.
223. Analyses and valuations of commercial fertilizers; analyses of fertilizer supplies, home mixtures, and special compounds. C. S. Cathcart [and others]. Sept. 30, 1909.
224. Analyses and valuations of commercial fertilizers and ground bone. By C. S. Cathcart [and others].—The cost of available nitrogen. By E. B. Voorhees. Dec. 13, 1909.
225. Insects injurious to strawberries. By J. B. Smith. Dec. 15, 1909.
226. Peach yellows and little peach. By M. A. Blake. Jan. 11, 1910.
227. Tests of commercial cultures for soil inoculation. By J. G. Lipman. Jan. 28, 1910.
228. Structure of tomato skins. By B. H. A. Groth. Feb. 3, 1910.
229. Insects injurious to sweet potatoes in New Jersey. By J. B. Smith. Feb. 4, 1910.
230. Concentrated feeding stuffs. By C. S. Cathcart [and others]. Apr. 21, 1910.
231. The second season with the peach orchard. By M. A. Blake. July 22, 1910.
232. Contribution to the study of Bordeaux injury on peaches. By B. H. A. Groth. Sept. 8, 1910.
233. Analyses and valuation of commercial fertilizers; analyses of fertilizer supplies, home mixtures, and special compounds. By C. S. Cathcart [and others]. Oct. 10, 1910.
234. Analyses and valuations of commercial fertilizers and ground bone. By C. S. Cathcart. Nov. 28, 1910.
235. Insects injurious to the peach trees in New Jersey. By J. B. Smith. Feb. 28, 1911.
236. Spraying experiments with peaches. By M. A. Blake and A. J. Farley. Apr. 6, 1911.
237. Concentrated feeding stuffs. By C. S. Cathcart [and others]. Apr. 7, 1911.
238. The F_1 heredity of size, shape, and number in tomato leaves: Pt. I, Seedlings. By B. H. A. Groth. May 11, 1911.
239. The F_1 heredity of size, shape, and number in tomato leaves: Pt. II, Mature plants. By B. H. A. Groth. May 24, 1911.
240. Analyses and valuations of commercial fertilizers; analyses of fertilizer supplies, home mixtures, and special compounds. By G. S. Cathcart [and others]. Sept. 26, 1911.
241. Analyses and valuations of commercial fertilizers and ground bone. By C. S. Cathcart [and others]. Dec. 2, 1911.
242. The F_1 heredity of size, shape, and number in tomato fruits. By B. H. A. Groth. Mar. 30, 1912.
243. Concentrated feeding stuffs. By C. S. Cathcart [and others]. Apr. 10, 1912.
244. Essentials in profitable egg production. By H. R. Lewis. May 9, 1912.
245. The elongation of the hypocotyl: A preliminary study. By B. D. Halsted. May 25, 1912.
246. The availability of nitrogenous materials as measured by ammonification. By J. G. Lipman, A. W. Blair, I. L. Owen, and H. C. McLean. June 1, 1912.
247. Experiments on ammonia formation in the presence of carbohydrates and of other non-nitrogenous organic matter. By J. G. Lipman, A. W. Blair, I. L. Owen, and H. C. McLean. June 1, 1912.
248. Experiments relating to the possible influence of protozoa on ammonification in the soil. By J. G. Lipman, A. W. Blair, I. L. Owen, and H. C. McLean. June 1, 1912.
249. Conditions affecting the availability of nitrogen compoundsin vegetation experiments, [I]. By J. G. Lipman, A. W. Blair, I. L. Owen, and H. C. McLean. June 1, 1912.
250. Miscellaneous vegetation experiments. By J. G. Lipman, A. W. Blair, I. L. Owen, and H. C. McLean. June 1, 1912.
251. Factors relating to the availability of nitrogenous plant foods. By J. G. Lipman, A. W. Blair, I. L. Owen, and H. C. McLean. July 1, 1912.
252. Analyses and valuations of commercial fertilizers: analyses of fertilizer supplies, home mixtures, and special compounds. By C. S. Cathcart [and others]. Sept. 21, 1912.
253. The associative growth of legumes and non-legumes. By J. G. Lipman. Oct. 1, 1912.
254. Analyses and valuations of commercial fertilizers and ground bone. By C. S. Cathcart [and others]. Nov. 30, 1912.
255. Fertilizer registrations. By C. S. Cathcart. Jan. 28, 1913.
256. Concentrated feeding stuffs; feeding stuffs law of 1912 and registrations. By C. S. Cathcart [and others]. May 7, 1913.
257. Conditions affecting the availability of nitrogen compounds in vegetation experiments, II. By J. G. Lipman, A. W. Blair, I. L. Owen, and H. C. McLean. Nov. 30, 1912.
258. Experiments on the accumulation and utilization of atmospheric nitrogen in field soils. By J. G. Lipman, A. W. Blair, I. L. Owen, and H. C. McLean. Nov. 30, 1912.
259. Analyses and valuations of commercial fertilizers, fertilizer supplies and home mixtures. By C. S. Cathcart. Sept. 18, 1913.
260. Field experiments on the availability of nitrogenous fertilizers. By J. G. Lipman and A. W. Blair. June 29, 1913.
261. Analyses and valuations of commercial fertilizers and ground bone. By C. S. Cathcart. Dec., 1913.
262. Analyses of materials sold as insecticides and fungicides. By C. S. Cathcart, R. L. Willis, and W. H. Pearson. Dec., 1913.
263. Report of the director, 1912–13. By J. G. Lipman. Dec. 31, 1913.
264. Fertilizer registration. By C. S. Cathcart. Jan. 14, 1914.

265. The ash and protein factor in poultry feeding. By H. R. Lewis. Dec. 31, 1913.
266. Results of seed inspection, 1913. By J. P. Helyar. Mar. 28, 1914.
267. Comparison of magnesian and non-magnesian limestone in rotation experiments. By J. G. Lipman [and others]. Mar. 31, 1914.
268. Nitrogen utilization in field and cylinder experiments. By J. G. Lipman, A. W. Blair, H. C. McLean, and L. F. Merrill. Apr. 15, 1914.
269. Methods and results in vegetation experiments. By J. G. Lipman and A. W. Blair. May 29, 1914.
270. Ammonification studies with soil fungi. By H. C. McLean and G. W. Wilson. June 1, 1914.
271. Concentrated feeding stuffs and registrations for 1914. By C. S. Cathcart. June 1, 1914.
272. Analyses and valuations of commercial fertilizers, fertilizer supplies and home mixtures. By C. S. Cathcart. Sept. 15, 1914.
273. Analyses of materials sold as insecticides and fungicides. By C. S. Cathcart and R. L. Willis. Oct. 26, 1914.
274. Analyses and valuations of commercial fertilizers and ground bone; analyses of agricultural lime. C. S. Cathcart. Dec. 17, 1914.
275. Fertilizer registrations. By C. S. Cathcart. Jan. 7, 1915.
276. The mosquitoes of New Jersey and their control. By T. J. Headlee. Jan. 30, 1915. See 348.
277. Humidity, soil, and fertility studies with roses. By M. A. Blake. Jan. 30, 1915.
278. Some results in size inheritance [in tomatoes]. By B. H. A. Groth. Apr. 14, 1915.
279. Results of seed inspection, 1914. By J. P. Helyar and Robert Schmidt. May 20, 1915.
280. Pot experiments on the availability of nitrogen in mineral and organic compounds. By J. G. Lipman, H. C. McLean, A. W. Blair, and L. K. Wilkins. Dec. 1, 1914.
281. Nitrogen utilization in field and cylinder experiments. By J. G. Lipman, H. C. McLean, A. W. Blair, and L. K. Wilkins. Dec. 1, 1914.
282. Factors influencing the protein content of soy beans. By J. G. Lipman, H. C. McLean, A. W. Blair, and L. K. Wilkins. Dec. 1, 1914.
283. Concentrated feeding stuffs and registrations for 1915. By C. S. Cathcart. June 16, 1915.
284. Packing and shipping peaches in Georgia carriers. By M. A. Blake and C. H. Connors. June 30, 1915.
285. Analyses and valuations of commercial fertilizers, fertilizer supplies and home mixtures. By C. S. Cathcart. Aug. 31, 1915.
286. Analyses of materials sold as insecticides and fungicides. By C. S. Cathcart and R. L. Willis. Sept. 29, 1915.
287. Analyses and valuations of commercial fertilizers and ground bone; analyses of agricultural lime. By C. S. Cathcart. Dec. 9, 1915.
288. Investigations realtive to the use of nitrogenous plant-foods, 1898–1912. By J. G. Lipman and A. W. Blair. Jan. 4, 1916.
289. Cylinder experiments relative to the utilization and accumulation of nitrogen. By J. G. Lipman and A. W. Blair. Jan. 4, 1916.
290. Fertilizer registrations for 1916. By C. S. Cathcart. Jan. 18, 1916.
291. The influence of the tannin content of the host plant *Endothia parasitica* and related species. By M. T. Cook and G. W. Wilson. Feb. 1, 1916.
292. The response of the house fly (*Musca domestica* L.) to ammonia and other substances. By C. H. Richardson. Feb. 1, 1916.
293. Effect of pruning peach trees at different heights previous to planting in the orchard. By M. A. Blake. Feb. 1, 1916.
294. Farm profits and factors influencing farm profits on 370 potato farms in Monmouth County, N. J. By Frank App. Apr. 20, 1916.
295. Commercial feeding stuffs and registrations for 1916. By C. S. Cathcart. May 27, 1916.
296. The more important greenhouse insects. By H. B. Weiss. May 31, 1916.
297. Analyses of commercial fertilizers, fertilizer supplies, and home mixtures. By C. S. Cathcart. Sept. 16, 1916.
298. Report of the director for 1916. By J. G. Lipman. Nov. 1, 1916.
299. The influence of salinity on the development of certain species of mosquito larvae and its bearing on the problem of the distribution of species. By F. E. Chidester. [1916?]
300. A biological study of the more important of the fish enemies of the salt marsh mosquitoes. By F. E. Chidester. June 1, 1916.
301. Analyses of materials sold as insecticides and fungicides for 1916. By C. S. Cathcart and R. L. Willis. Oct. 2, 1916.
302. Results of seed inspection, 1915–16. By J. P. Helyar. Nov. 1, 1916.
303. Analyses of commercial fertilizers and ground bone; analyses of agricultural lime. By C. S. Cathcart. Dec. 12, 1916.
304. Fertilizer registrations for 1917. By C. S. Cathcart. Jan. 22, 1917.
305. Maintaining the nitrogen supply of the soil: Continuous wheat and rye with and without a leguminous green manure crop. By A. W. Blair. Jan. 6, 1917.
306. Some recent advances in knowledge of the natural history and the control of mosquitoes. By T. J. Headlee. Oct. 17, 1916.
307. The domestic flies of New Jersey. By C. H. Richardson. Feb. 7, 1917.
308. The Cattleya fly [*Isosoma orchidearum* Westwood]. By J. B. Moore. Oct. 2, 1916.
309. The chemical composition of the soils of the Freehold area in New Jersey. By A. W. Blair and H. C. McLean. Sept. 12, 1916.
310. The high calcium content of some cucurbit vines. By L. K. Wilkins. Apr. 16, 1917.
311. Commercial feeding stuffs and registrations for 1917. By C. S. Cathcart. June 1, 1917.
312. Farm profits and factors influencing farm profits on 284 general and 75 dairy farms in Monmouth County, N. J. By Frank App. Jan. 15, 1917.
313. The parasitic fungi of New Jersey. By C. A. Schwarze. Sept., 1917.
314. Analyses of commercial fertilizers, fertilizer supplies and home mixtures. By C. S. Cathcart. Sept. 19, 1917.
315. Analyses of materials sold as insecticides and fungicides for 1917. By C. S. Cathcart and R. L. Willis. Sept. 27, 1917.
316. Influence of lime upon the yield of dry matter and nitrogen content of alfalfa. By J. G. Lipman and A. W. Blair. Jan. 1, 1917.
317. Report of the director for 1917. By J. G. Lipman. Nov. 1, 1917.
318. Analyses of commercial fertilizers and ground bone; analyses of agricultural lime. By C. S. Cathcart. Dec. 10, 1917.
319. A study of physiological balance for buckwheat grown in three-salt solutions. By J. W. Shive. July 1, 1917.
320. Farm profits and factors influencing farm profits on 460 dairy farms in Sussex County, N. J. By Frank App. July 1, 1917.
321. Fertilizer registrations for 1918. By C. S. Cathcart. Jan. 28, 1918.
322. Results of seed inspection, 1917. By J. P. Helyar. Feb. 1, 1918.

323. The value of nitrate of soda in crop production. By J. G. Lipman and A. W. Blair. Feb. 9, 1918 Summaries results of all N. J. station experiments on this subject.
324. The strawberry weevil (*Anthonomus signatus* Say). By T. J. Headlee. Jan. 1, 1918.
325. Poultry buildings: Laying and breeding houses. By H. R. Lewis and W. C. Thompson. Mar 30, 1917.
326. Pruning experiments with peaches: Results of first two seasons. By M. A. Blake and C. H. Connors. May 23, 1917.
327. Commercial feeding stuffs and registrations for 1918. By C. S. Cathcart. May 1, 1918.
328. Some important orchard plant lice. By T. J. Headlee. Feb. 15, 1918.
329. Profits and factors influencing profits on 150 poultry farms in New Jersey. By Frank App, A. G. Waller and H. R. Lewis. Mar. 15, 1918.
330. Report of the director for 1918. By J. G. Lipman. Aug. 15, 1918.
331. Analyses of commercial fertilizers, fertilizer supplies and home mixtures. By C. S. Cathcart. Oct. 10, 1918.
332. Some studies on the eggs of important apple plant lice. By Alvah Peterson. [1918?]
333. Analyses of materials sold as insecticides and fungicides during 1918. By C. S. Cathcart and R. L. Willis. Oct. 26, 1918.
334. Analyses of commercial fertilizers and ground bone; analyses of agricultural lime. By C. S. Cathcart Dec. 23, 1918.
335. Fertilizer registrations for 1919. By C. S. Cathcart. Jan. 30, 1919.
336. Commercial feeding stuffs and registrations for 1919. Apr. 28, 1919.
337. Analyses of commercial fertilizers, fertilizer supplies and home mixtures. By C. S. Cathcart. Oct. 8, 1919.
338. The first two years of the Vineland contest: A study of the results obtained during the first two years at the Vineland international egg-laying and breeding contest. By H. R. Lewis, R. R. Hannas, and E. H. Wene. Oct., 1919.
339. Analyses of materials sold as insecticides and fungicides during 1919. By C. S. Cathcart and R. L. Willis. Oct. 13, 1919.
340. Analyses of commercial fertilizers and ground bone; analyses of agricultural lime. By C. S. Cathcart. Dec. 30, 1919.
341. Fertilizer registrations for 1920. By C. S. Cathcart. Jan. 26, 1920.
342. Analyses of commercial feeding stuffs and registrations for 1920. By C. S. Cathcart. May 3, 1920.
343. Analyses of materials sold as insecticides and fungicides during 1920. By C. S. Cathcart and R. L. Willis, Oct., 1920.
344. Analyses of commercial fertilizers, fertilizer supplies and home mixtures, 1920. By C. S. Cathcart. Oct. 20, 1920.
345. Studies on tomato leaf-spot control. By W. H. Martin. Oct. 1, 1919.

SPECIAL BULLETINS.

A. Yellow tobacco: A superior variety of tobacco which grows well on pine lands. By Henry Garnier and G. H. Cook. Mar. 20, 1882.
B. Alfalfa or lucerne (*Medicago sativa*). By G. H. Cook. Apr. 15, 1887.
C. Pollen versus rain: Proposed experiments illustrating the influences of rainfall at blooming time upon subsequent fruitfulness. By B. D. Halsted. Apr. 8, 1889.
D. Memoranda about cranberry insects. By J. B. Smith. Apr. 9, 1889.
E. Oyster interests of New Jersey. By Julius Nelson. Apr. 13, 1889.
F. The horn fly. By J. B. Smith. July 26, 1889.
G. The potato rot. By B. D. Halsted. Aug. 7, 1889.
H. The cranberry scald. By B. D. Halsted. Aug. 28, 1889.
I. Questions relative to general farm practice. By E. B. Voorhees. Oct. 28, 1889.
J. The sweet potato rot. By B. D. Halsted. Nov. 30, 1889.
K. The insects injuriously affecting cranberries. By J. B. Smith. Feb. 28, 1890.
L. Observations upon the peach for 1890. By B. D. Halsted. Apr. 22, 1890.
M. Field experiments with soil and black rots of sweet potatoes. By B. D. Halsted. Nov. 23, 1891.
N. Insects injurious to the blackberry. By J. B. Smith. Nov. 30, 1891.
O. Experiments with nitrate of soda upon tomatoes. By E. B. Voorhees. Apr. 6, 1892.
P. Experiments with fertilizers upon white and sweet potatoes. By E. B. Voorhees. Apr. 9, 1892.
Q. Some fungous diseases of the celery. By B. D. Halsted. Apr. 21, 1892.
R. Catalogue of reports and bulletins; index of reports, 1880–1897. Dec. 31, 1897.
S. Soil fungicides for potato and turnip diseases. By B. D. Halsted. Feb., 1900.
T. The salt-marsh mosquito, *Culex sollicitans* Wlk. By J. B. Smith. July, 1902.

MISCELLANEOUS.

Report of the New Jersey State Agricultural Experiment Station upon the mosquitoes occurring within the State, their habits, life history, &c. By J. B. Smith. 1904.

NEW MEXICO.

Agricultural Experiment Station of New Mexico, State College.

BULLETINS.

1. Announcements. By Hiram Hadley. Apr., 1890.
2. Announcements. By A. E. Blount and Hiram Hadley. Oct., 1890.
3. A preliminary account of some insects injurious to fruits. By C. H. T. Townsend. June, 1891.
4. Horticultural division: Fruit trees; forest and shade trees; nut-bearing trees; vegetables. By A. E. Blount. Dec.,1891.
5. Notices of importance concerning fruit insects: Vine leaf-hopper; codling moth; root borers; green June-beetle. By C. H. T. Townsend. Mar., 1892.
6. Agricultural division: Cereals, forage plants, grasses, clovers, textile plants, and sorghums. By A. E. Blount. Mar., 1892.
7. Scale insects in New Mexico. By C. H. T. Townsend. June, 1892.
8. Wheat, oats, barley, rye, sugar, beets, sorghum, and cañaigre: Varieties tested; manner of planting, irrigating, and cultivating; results obtained. By A. E. Blount. Nov., 1892.
9. Insecticides and their appliances. By C. H. T. Townsend. Dec., 1892.
10. Insects of 1893. By T. D. A. Cockerell. Sept., 1893.
11. Notes on cañaigre. By A. E. Blount.—Meteorological data and deductions. By H. H. Griffin. Oct., 1893.

12. The value of Rio Grande water for the purpose of irrigation. By Arthur Goss. Nov., 1893.
13. New Mexico weeds, I. By E. O. Wooton. Oct., 1894.
14. Cañaigre. By A. E. Blount. Dec., 1894.
15. Entomological observations in 1894; life zones in New Mexico; entomological diary at Santa Fe. By T. D. A. Cockerell. Jan., 1895.
16. Russian thistle. By E. O. Wooten. Sept., 1895.
17. Principles of stock feeding and some New Mexico feeding stuffs. By Arthur Goss. Dec., 1895.
18. Some New Mexico forage plants. By E. O. Wooten. Mar., 1896.
19. Report of entomologist, Pt. I. By T. D. A. Cockerell. Apr., 1896.
20. Seeds. By George Vestal. Dec., 1896.
21. Results of experiments at the San Juan substation. By H. H. Griffin. Jan., 1897.
22. Alkali in the Rio Grande and Animas Valleys. By Arthur Goss and H. H. Griffin. Mar., 1897.
23. Sugar beets. By C. T. Jordan. Apr., 1897.
24. Life zones in New Mexico II. By T. D. A. Cockerell. Aug., 1897.
25. Preliminary notes on the codling moth. By T. D. A. Cockerell. Feb., 1898.
26. New Mexico sugar beets, 1897. By Arthur Goss. June, 1898.
27. Report on plums. By George Vestal and Fabian Garcia. June, 1898.
28. Life zones in New Mexico: II, The zonal distribution of Coleoptera. By T. D. A. Cockerell. Dec., 1898.
29. New Mexico sugar beets, 1898. By Arthur Goss and A. M. Holt. May, 1899.
30. The effect of spring frosts on the peach crop, with cultural notes on the peach in New Mexico. By Fabian Garcia. May, 1899.
31. A study of soil moisture. By C. A. Keffer and J. D. Tinsley. Dec., 1899.
32. Grasses and forage crops. By C. A. Keffer. Dec., 1899.
33. Notes from the San Juan substation. By C. E. Mead. Apr., 1900.
34. Principles of water analyses as applied to New Mexico waters. By Arthur Goss. June, 1900.
35. Observations on insects. By T. D. A. Cockerell. Oct., 1900.
36. Announcement to New Mexico ranchmen and list of bulletins. By F. W. Sanders. Oct., 1900. Revised June, 1918.
37. Notes on the food of birds. By T. D. A. Cockerell. Mar., 1901.
38. Soil and soil moisture investigations for the season of 1900. By J. D. Tinsley and J. J. Vernon. May, 1901.
39. Orchard notes. By Fabian Garcia. May, 1901.
40. A southern New Mexico flower garden. By F. E. Lester. Nov., 1901.
41. Spraying orchards for the codling moth. By Fabian Garcia. Mar., 1902.
42. Alkali. By J. D. Tinsley. Apr., 1902.
43. Drainage and flooding for the removal of alkali. By J. D. Tinsley. June, 1902.
44. Ash analyses of some New Mexico plants. By Arthur Goss. Mar., 1903.
45. Pumping for irrigation from wells. By J. J. Vernon and F. E. Lester. Apr., 1903.
46. Soil moisture investigations for the seasons of 1901 and 1902. By J. J. Vernon and J. D. Tinsley. May, 1903.
47. Shade trees and other ornamentals. By Fabian Garcia. June, 1903.
48. Soil moisture investigations for the season of 1903. By J. D. Tinsley and J. J. Vernon. Sept., 1903.
49. Cañaigre. By R. F. Hare. Dec., 1903.
50. Steer and lamb feeding. By J. J. Vernon. Feb., 1904.
51. Native ornamental plants of New Mexico. By E. O. Wooton. May, 1904. See 87.
52. Onion culture. By Fabian Garcia. Sept., 1904. Also Spanish edition.
53. Pumping for irrigation: A fuel test of crude oil, kerosene and gasoline. By J. J. Vernon, F. E. Lester, and H. C. McLallen. Oct., 1904.
54. Soil moisture investigations for the season of 1904. By J. D. Tinsley and J. J. Vernon. Mar., 1905.
55. Tuberculosis in cattle and tuberculin tests of the station herd. By J. M. Scott. June, 1905.
56. The duty of well water and the cost and profit on irrigated crops in the Rio Grande Valley. By J. J. Vernon, A. E. Lovett, and J. M. Scott. Nov., 1905.
57. Steer feeding. By J. J. Vernon and J. M. Scott. Jan., 1906.
58. European grapes. By Fabian Garcia. Apr., 1906.
59. Forty years of southern New Mexico climate. By J. D. Tinsley. May., 1906.
60. Prickly pear and other cacti as food for stock, II. By David Griffiths and R. F. Hare. Nov., 1906.
61. Dry farming in New Mexico. By J. J. Vernon. Jan., 1907.
62. Pig feeding. By J. J. Vernon and J. M. Scott. Feb., 1907.
63. Melon culture. By Fabian Garcia. Mar., 1907.
64. The tuna as food for man. By R. F. Hare and David Griffiths. Apr., 1907.
65. Codling moth investigations during 1903 and 1904. By Fabian Garcia. May, 1907.
66. The range problem in New Mexico. By E. O. Wooton. Apr., 1908.
67. Chile culture. By Fabian Garcia. May, 1908.
68. Injurious insects. By Fabian Garcia. Aug., 1908.
69. Experiments on the digestibility of prickly pear by cattle. By R. F. Hare. Sept., 1908.
70. Sweet potato culture. By Fabian Garcia. Apr., 1909.
71. The small irrigation pumping plant. By B. P. Fleming. May, 1909.
72. Denatured alcohol from tunas and other sources. By R. F. Hare, S. R. Mitchell and A. P. Bjerregaard. Aug., 1909.
73. Tests of pumping plants in New Mexico, 1908–9. By B. P. Fleming and J. B. Stoneking. Nov., 1909.
74. Onion tests, 1905–1909. By Fabian Garcia. Jan., 1910.
75. Apple culture under irrigation. By Fabian Garcia. Feb., 1910.
76. Peach experiments 1906–1910. By Fabian Garcia and J. E. Mundell. Mar., 1911.
77. Tests of centrifugal pumps. By P. B. Fleming and J. B. Stoneking. Apr., 1911.
78. Cacti in New Mexico. By E. O. Wooton. May, 1911.
79. Alfalfa and corn for fattening lambs. By H. H. Simpson. June, 1911.
80. A study of the carbohydrates in the prickly pear and its fruits. By R. F. Hare. Sept., 1911.
81. The grasses and grass-like plants of New Mexico. By E. O. Wooton and P. C. Standley. Dec., 1911.
82. Growing Denia onion seed. By Fabian Garcia. Mar., 1912.
83. Composition of some New Mexico waters, with a discussion of their fitness for irrigation and domestic purposes. By R. F. Hare and S. R. Mitchell. June, 1912.
84. Wheat growing under irrigation. By E. P. Humbert. Nov., 1912.
85. Grape crown-gall investigations. By Fabian Garcia and J. W. Rigney. Jan., 1913.
86. Soil moisture. By R. E. Willard and E. P. Humbert. Apr., 1913.
87. Trees and shrubs of New Mexico. By E. O. Wooton. June, 1913. Supersedes 51.
88. Preliminary tank experiments on the movement, changes in composition, and toxic effect on wheat of certain salts in sandy loam and adobe soils. By R. F. Hare.—Soil analyses. By A. A. Laferriere and José Quintero. Oct., 1913.
89. Hardiness of fruit buds and flowers to frost. By Fabian Garcia and J. W. Rigney. Feb., 1914.

90. Alfalfa pasture for pigs. By Luther Foster and H. H. Simpson. May, 1914.
91. The utilization of feed by range steers of different ages: I, Alfalfa hay. By F. W. Christensen and H. H. Simpson. June, 1914.
92. Onions, spinach, cauliflower and casabas. By Fabian Garcia and J. W. Rigney. Jan., 1915.
93. Soil physics and soil moisture in relation to first years' growth of alfalfa. By L. R. McNeely and G. W. Kable. Mar., 1915.
94. The grape leafhopper. By D. E. Merrill. Apr., 1915.
95. Probable combination of the chlorine ions in alkali salts: A review and discussion of some of the methods for the determination of alkali in soils. By R. F. Hare. Apr., 1915.
96. Alfalfa hay for hogs. By Luther Foster and H. H. Simpson. June, 1915.
97. Tests of submerged orifice headgates for the measurement of irrigation water. By F. L. Bixby. June, 1915.
98. Economic feeding for milk production in New Mexico. By Luther Foster and R. W. Latta. June, 1915.
99. Peas as an orchard green manure and cover crop. By Fabian Garcia. Nov., 1915.
100. Winter protection of the vinifera grape. By Fabian Garcia and J. W. Rigney. Jan., 1916.
101. Feeding range steers. By Luther Foster and H. H. Simpson. Mar., 1916.
102. Grasshopper control. By D. E. Merrill. Apr., 1916.
103. The utilization of feed by range steers of different ages: II, Alfalfa hay and milo maize meal. By F. W. Christensen, H. H. Simpson, and Luther Foster. June, 1916.
104. Dry farming in eastern New Mexico [1909–1916]. By J. E. Mundell and H. G. Smith. Feb., 1917.
105. New Mexico beans. By Fabian Garcia [and others]. Mar., 1917.
106. The bean beetle (*Epilachna corrupta* Muls.). By D. E. Merrill. Apr., 1917.
107. Sugar beet culture. By R. L. Stewart. May, 1917.
108. The utilization of dry farm crops in beef production. By Luther Foster and H. G. Smith. Aug., 1917.
109. Wheat. By R. L. Stewart [and others]. Feb., 1918.
110. Nine year band record of the codling moth. By J. W. Rigney and A. B. Fite. Mar., 1918.
111. Sudan grass. By R. L. Stewart and Luther Foster. Apr., 1918.
112. Baby beef. By Luther Foster and E. J. Maynard. May, 1918.
113. Climate in relation to crop adaptation in New Mexico. By C. E. Linney and Fabian Garcia. June, 1918.
114. Range cow maintenance on yucca and sotol. By Luther Foster and C. W. Humble.—Collection, preparation, and feeding of soapweed under practical range conditions on the Jornada range reserve. By C. L. Forsling. July, 1918.
115. La cebolla, el ajo y la espinaca. By Fabian Garcia. Aug., 1918.
116. The peach twig borer (*Anarsia lineatella* Zell.). By D. E. Merrill. Oct., 1918.
117. Poultry feeding experiment. By R. B. Thompson. Oct., 1918.
118. Cabbage culture. By J. W. Rigney. Apr., 1919.
119. Sorghums for silage and hay. By R. L. Stewart. Apr., 1919.
120. Cotton growing. By R. L. Stewart. Dec., 1919.
121. Fusarium wilt of chile pepper. By L. H. Leonian. Dec., 1919.
122. Dairy cow feeding experiments: Corn silage versus alfalfa hay, dried beet pulp versus corn silage. By Luther Foster and J. R. Meeks. Feb., 1920.
123. Soil moisture movement in relation to growth of alfalfa. By C. A. Thompson and E. L. Barrows. Feb., 1920.

NEW YORK.

Cornell University Agricultural Experiment Station, Ithaca.[12]

BULLETINS.

1. Experimental dairy house. By I. P. Roberts. May, 1888.
2. [Feeding lambs for fat and lean.] By I. P. Roberts [and B. de Barros]. Aug., 1888.
3. The insectary of Cornell University; on preventing the ravages of wireworms; on the destruction of plum curculio by poisons. By J. H. Comstock. Nov., 1888.
4. Growing corn for fodder and ensilage; economic seed manure; Curwin's hog powder. By I. P. Roberts. Dec. 1888.
5. On the production of lean meat in mature animals; does heating milk affect the quality or quantity of butter? By I. P. Roberts. Apr., 1889.
6. On the determination of hydroscopic water in air-dried fodders; the determination of nitrogen by the azotometric treatment of the solution resulting from the Kjeldahl digestion; fodders and feeding stuffs. By W. P. Cutter. June, 1889.
7. On the influences of certain conditions upon the sprouting of seeds. By L. H. Bailey. July, 1889.
8. On the effect of different rations on fattening lambs. By I. P. Roberts and H. H. Wing. Aug., 1889.
9. A study of windbreaks in their relations to fruit growing. By L. H. Bailey. Sept., 1889.
10. Tomatoes. [By L. H. Bailey]. Oct., 1889.
11. On a saw-fly borer in wheat. By J. H. Comstock. Nov., 1889.
12. A new apparatus for drying substances in hydrogen and for the extraction of the fat. By G. C. Caldwell. Dec., 1889.
13. On the deterioration of farmyard manure by leaching and fermentation; on the effect of a grain ration for cows at pasture. By I. P. Roberts and H. H. Wing. Dec., 1889.
14. On the strawberry leaf blight; on another disease of the strawberry. By W. R. Dudley. Dec., 1889.
15. Sundry investigations made during the year. By W. P. Cutter [and others]. Dec., 1889.
16. Growing corn for fodder and ensilage. By I. P. Roberts and H. H. Wing. Mar., 1890.
17. A description of Cochran's method for the determination of fat in milk, for the use of dairymen. By G. C. Caldwell. May, 1890.
18. Experiences in spraying plants. By L. E. Bailey. July, 1890.
19. Reports upon the condition of fruit growing in western New York. By L. H. Bailey. Aug., 1890.
20. Cream raising by dilution; variations in fat of milk served to customers in dipping from cans. By H. H. Wing and C. D. Smith. Sept., 1890.
21. Tomatoes. By L. H. Bailey and W. M. Munson. Oct., 1890.
22. On the effect of a grain ration for cows at pasture. By I. P. Roberts and H. H. Wing. Nov., 1890.
23. Insects injurious to fruits. By J. H. Comstock and M. V. Slingerland. Dec., 1890.
24. The clover rust. By J. K. Howell. Dec., 1890.
25. Sundry investigations made during the year. By Harry Snyder [and others]. Dec., 1890.

[12] The Agricultural Experiment Station at Cornell University was established in 1879. Prior to its reorganization in 1888, three reports giving results of the work were issued.

26. Experiences with eggplants. By L. H. Bailey and W. M. Munson. Mar., 1891.
27. The production and care of farm manures. By I. P. Roberts. May, 1891.
28. Experiments in the forcing of tomatoes. By L. H. Bailey. June, 1891.
29. Cream raising by dilution; the effect of a delay in setting on the efficiency of creaming; application of Dr. Babcock's centrifugal method to the analysis of milk, skim milk, buttermilk, and butter; the relation of fibrin to the effectual creaming of milk. By Harry Snyder. July, 1891.
30. Some preliminary studies of the influence of the electric arc lamp upon greenhouse plants. By L. H. Bailey. Aug., 1891.
31. The forcing of English cucumbers. By L. H. Bailey. Sept., 1891.
32. Tomatoes. By L. H. Bailey and E. G. Lodeman. Oct., 1891.
33. Wireworms. By J. H. Comstock and M. V. Slingerland. Nov., 1891. See 50.
34. Dewberries. By L. E. Bailey. Nov., 1891.
35. Combinations of fungicides and insecticides, and some new fungicides. By E. G. Lodeman. Dec., 1891.
36. On the effect of a grain ration for cows at pasture. By I. P. Roberts and H. H. Wing. Dec., 1891.
37. Sundry investigations made during the year. By Harry Snyder [and others]. Dec., 1891.
38. The cultivated native plums and cherries. By L. H. Bailey. June, 1892.
39. Creaming and aerating milk. By H. H. Wing. July, 1892.
40. Removing tassels from corn. By G. C. Watson. July, 1892.
41. On the comparative merits of steam and hot water for greenhouse heating. By F. W. Card and L. H. Bailey. Aug., 1892.
42. Second report upon electro-horticulture. By L. H. Bailey. Sept., 1892.
43. Some troubles of winter tomatoes. By L. H. Bailey. Sept., 1892.
44. The pear-tree psylla. By M. V. Slingerland. Oct., 1892.
45. Tomatoes. By L. H. Bailey and L. C. Corbett. Oct., 1892.
46. Mulberries. By L. H. Bailey. Nov., 1892.
47. Feeding lambs and pigs. By I. P. Roberts and G. C. Watson. Dec., 1892.
48. Spraying apple orchards in a wet season. By E. G. Lodeman. Dec., 1892.
49. Sundry investigations of the year. By G. C. Caldwell [and others]. Dec., 1892.
50. The bud moth. By M. V. Slingerland. Mar., 1893. See 107.
51. Four new types of fruits: *Prunus simonii*, Crandall currant, wineberry, dwarf Juneberry. By L. H. Bailey. Apr., 1893.
52. Cost of milk production; variation in individual cows. By H. H. Wing.—Fertilizers. By G. C. Watson, May, 1893.
53. Œdema of the tomato. By G. F. Atkinson. May, 1893.
54. Dehorning. By I. P. Roberts. June, 1893.
55. Greenhouse notes for 1892-93: Third report upon electro-horticulture; winter cauliflowers; second report upon steam and hot-water heating. By L. H. Bailey. July, 1893.
56. The production of manure. By G. C. Watson. Aug., 1893.
57. Raspberries and blackberries. By F. W. Card. Sept., 1893.
58. The four-lined leaf bug (*Poecilocapsus lineatus*). By M. V. Slingerland. Oct., 1893.
59. Does mulching retard the maturity of fruits? By L. H. Bailey. Nov., 1893.
60. The spraying of orchards. By E. G. Lodeman. Nov. 1893.
61. Sundry investigations of the year. By G. F. Atkinson [and others]. Dec. 1893.
62. The Japanese plums in North America. By L. H. Bailey. Jan., 1894.
63. Cooperative test of sugar beets. By I. P. Roberts. Mar., 1894.
64. On certain grass-eating insects: A synopsis of the species of Crambus of the Ithaca fauna. By E. P. Felt. Mar., 1894.
65. Tuberculosis in relation to animal industry and public health. By James Law. Apr., 1894.
66. Test of cream separators. By H. H. Wing. May, 1894.
67. Some recent Chinese vegetables. By L. H. Bailey. June, 1894.
68. The cultivated poplars, with remarks upon the planting of grounds. By L. H. Bailey. Aug., 1894.
69. Hints on the planting of orchards. By L. H. Bailey. Aug., 1894.
70. The native dwarf cherries. By L. H. Bailey. Aug., 1894.
71. Apricot growing in western New York. By L. H. Bailey. Aug., 1894.
72. The cultivation of orchards. By L. H. Bailey. Sept., 1894. Second edition, Jan., 1899.
73. Leaf curl and plum pockets. By G. F. Atkinson. Sept. 1894.
74. Impressions of the peach industry in western New York. By L. H. Bailey. Oct., 1894.
75. Peach yellows. By L. H. Bailey. Oct., 1894.
76. Some grape troubles of western New York. By E. G. Lodeman. Nov., 1894.
77. The grafting of grapes. By E. G. Lodeman. Nov., 1894.
78. The cabbage root maggot, with notes on the onion maggot and allied insects. By M. V. Slingerland. Nov., 1894.
79. Varieties and leaf blight of the strawberry. By L. H. Bailey. Dec., 1894.
80. The quince in western New York. By L. H. Bailey. Dec., 1894.
81. Black knot of plums and cherries, and methods of treatment. By E. G. Lodeman. Dec., 1894.
82. Experiments with tuberculin on nontuberculous cows. By James Law. Dec., 1894.
83. A plum scale in western New York. By M. V. Slingerland. Dec., 1894.
84. The recent apple failures of western New York. By L. H. Bailey. Jan., 1895.
85. Whey butter. By H. H. Wing. Mar., 1895.
86. The spraying of orchards: Apples, quinces, plums. By E. G. Lodeman. Mar., 1895.
87. The dwarf lima beans. By L. H. Bailey. Apr. 1895.
88. Early lamb raising. By G. C. Watson. Apr., 1895.
89. Feeding pigs. By G. C. Watson. May, 1895.
90. The China asters, with remarks upon flower beds. By L. H. Bailey. Apr., 1895.
91. Recent chrysanthemums. By Michael Barker. Apr., 1895.
92. On the effect of feeding fat to cows. By H. H. Wing. May, 1895.
93. The cigar case-bearer in western New York. By M. V. Slingerland. May, 1895. Reprint, May, 1895.
94. Damping off. By G. F. Atkinson. May, 1895.
95. Winter muskmelons. By L. H. Bailey. June, 1895.
96. Forcing house miscellaneous. By L. H. Bailey and E. G. Lodeman. June. 1895.
97. Studies in artificial cultures of entomogenous fungi. By R. H. Pettit. July, 1895.
98. Cherries. By L. H. Bailey and G. H. Powell. July, 1895.
99. Blackberries. By L. H. Bailey. Aug., 1895.
100. Evaporated raspberries in western New York. By L. H. Bailey. Sept., 1895.
101. Notions about the spraying of trees, with remarks on the canker-worm. By L. H. Bailey. Sept., 1895.
102. General observations respecting the care of fruit trees, with some reflections upon weeds. By L. H. Bailey. Oct., 1895. Reprint, Oct., 1895.
103. Soil depletion in respect to the care of fruit trees. By I. P. Roberts. Oct., 1895. Reprint, Oct., 1895.
104. Climbing cutworms in western New York. By M. V. Slingerland. Nov. 1895.

105. Tests of cream separators. By H. H. Wing. Dec., 1895.
106. Revised opinions of the Japanese plums. By L. H. Bailey, Jan., 1896.
107. Wireworms and the bud moth. By M. V. Slingerland. Jan., 1896. Revises and condenses 33 and 50.
108. The pear psylla and the New York plum scale. By M. V. Slingerland. Jan., 1896.
109. Geological history of the Chautauqua grape belt. By R. S. Tarr. Jan., 1896.
110. Extension work in horticulture. By L. H. Bailey. Jan., 1896.
111. Sweet peas. By L. H. Bailey and A. P. Wyman. Feb., 1896.
112. The 1895 chrysanthemums. By L. H. Bailey, Wilhelm Miller, and C. E. Hunn. Feb., 1896.
113. Disease of the potato. By E. G. Lodeman. Feb., 1896.
114. Spray calendar. By E. G. Lodeman. Feb., 1896. Revised edition, Apr., 1898. See 188. Reprinted as Maryland Sta. Bul. 39.
115. The pole lima beans. By L. H. Bailey. Feb., 1896.
116. Dwarf apples. By E. G. Lodeman. May, 1896.
117. Fruit brevities. By L. H. Bailey. May, 1896.
118. Food preservatives and butter increases. By G. W. Cavanaugh. July, 1896.
119. The texture of the soil by L. H. Bailey. Aug., 1896.
120. The moisture of the soil and its conservation. By L. A. Clinton. Aug., 1896.
121. Suggestions for the planting of shrubbery. By L. H. Bailey. Sept., 1896.
122. Second report upon extension work in horticulture. By L. H. Bailey. Dec., 1896.
123. Green fruit worms. By M. V. Slingerland. Dec., 1896.
124. The pistol case-bearer in western New York. By M. V. Slingerland. Jan., 1897.
125. A disease of currant canes. By E. J. Durand. Feb., 1897.
126. The currant-stem girdler and the raspberry-cane maggot. By M. V. Slingerland. Feb., 1897.
127. A second account of sweet peas. By A. P. Wyman and M. S. Kains. Feb., 1897.
128. A talk about dahlias. By Wilhelm Miller. Feb., 1897.
129. How to conduct field experiments with fertilizers. By G. C. Caldwell. Feb., 1897.
130. Potato culture. By I. P. Roberts and L. A. Clinton. Mar., 1897.
131. Notes upon plums for western New York. By S. D. Willard and L. H. Bailey. Mar., 1897.
132. Notes upon celery. By B. M Duggar and L. H. Bailey. Mar., 1897.
133. The army worm in New York. By M. V. Slingerland. Apr., 1897.
134. Strawberries under glass. By C. E. Hunn and L. H. Bailey. Apr., 1897.
135. Forage crops. By I. P. Roberts and L. A. Clinton. May, 1897.
136. Chrysanthemums of 1896. By L. H. Bailey and Wilhelm Miller. May, 1897.
137. Agricultural extension work: Sketch of its origin and progress. May, 1897.
138. Studies and illustrations of mushrooms, I. By G. F. Atkinson. Sept., 1897.
139. Third report upon Japanese plums. By L. H. Bailey. Oct., 1897.
140. Second report on potato culture. By I. P. Roberts and L. A. Clinton. Nov., 1897.
141. Powdered soap as a cause of death among swill-fed hogs. By V. A. Moore. Nov., 1897.
142. The codling-moth. By M. V. Slingerland. Jan., 1898. Second edition, July, 1898.
143. Sugar beet investigations. By J. L. Stone [and others]. Feb., 1898.
144. Notes on spraying and on the San José scale. By H. P. Gould. Jan., 1898.
145. Some important pear diseases. By B. M. Duggar. Feb., 1898.
146. Fourth report of progress on extension work. By I. P. Roberts. Feb., 1898.
147. Fourth report upon crysanthemums. By Wilhelm Miller. Apr., 1898.
148. The quince curculio. By M. V. Slingerland. May, 1898.
149. Some spraying mixtures. By G. W. Cavanaugh. June, 1898.
150. Tuberculosis in cattle and its control. By James Law. July, 1898.
151. Gravity or dilution separators. By H. H. Wing. Aug., 1898.
152. Studies in milk secretion drawn from officially authenticated tests of Holstein Friesian cows. By H. H. Wing and LeRoy Anderson. Oct., 1898.
153. Impressions of our fruit-growing industries. By L. H. Bailey. Oct., 1898.
154. Tables for computing rations for farm animals. By J. L. Stone. Nov., 1898. Second edition, Nov., 1898. Third edition, Jan., 1905. Fourth edition, Dec., 1908. See also 321.
155. Second report on the San José scale, with remarks on the effects of kerosene on foliage. By H. P. Gould. Dec., 1898.
156. Third report on potato culture. By I. P. Roberts and L. A. Clinton. Dec., 1898.
157. The grape-vine flea beetle (*Haltica chalybea* Illiger.) By M. V. Slingerland. Dec., 1898.
158. An inquiry concerning the source of gas and taint producing bacteria in cheese curd. By V. A. Moore and A. R. Ward. Jan., 1899.
159. An effort to help the farmer. By I. P. Roberts. Jan., 1899.
160. Hints on rural school grounds. By L. H. Bailey. Jan., 1899.
161. Annual flowers. By G. N. Lauman and L. H. Bailey. Jan., 1899.
162. The period of gestation in cows. By H. H. Wing. Feb., 1899.
163. Three important fungous diseases of the sugar beet. By B. M. Duggar. Feb., 1899
164. Peach leaf curl and notes on the shot-hole effect of peaches and plums. By B. M. Duggar. Feb., 1899. See 180.
165. Ropiness in milk and cream. By A. R. Ward. Mar., 1899.
166. Sugar-beet investigations for 1898. By J. L. Stone [and others]. Mar., 1899.
167. The construction of the stave silo. By L. A. Clinton. Mar., 1899.
168. Studies and illustrations of mushrooms, II. By G. F. Atkinson. May, 1899.
169. Studies in milk secretion drawn from the records of the University herd 1891-1898. By H. H. Wing and Le Roy Anderson. May, 1899.
170. Emergency report on tent caterpillars. By M. V. Slingerland. May, 1899.
171. Concerning patents on gravity or dilution separators. By H. H. Wing. July, 1899.
172. The cherry fruit fly (*Rhagoletis cingulata*? Loew), a new cherry pest. By M. V. Slingerland. Sept., 1899.
173. The relation of food to milk-fat. By LeRoy Anderson. Nov., 1899.
174. The problem of impoverished lands, complied by L. H. Bailey. Nov., 1899.
175. Fourth report on Japanese plums. By L. H. Bailey. Nov., 1899.
176. The peach-tree borer. By M. V. Slingerland. Dec., 1899. Also Abridged edition. Dec., 1899.
177. Spraying notes. By L. H. Bailey [and others]. Jan., 1900.
178. The invasion of the udder by bacteria. By A. R. Ward. Jan., 1900.
179. Introduction to field experiments with fertilizers. By A. L. Knisely. Feb., 1900.
180. The prevention of peach leaf-curl. By W. A. Murrill. Mar., 1900. Includes a résumé of 164.
181. Pollination in orchards. By S. W. Fletcher. Mar., 1900.
182. Sugar beet investigations for 1899. By J. L. Stone and L. A. Clinton. Apr., 1900.
183. Sugar beet pulp as a food for cows. By H. H. Wing and LeRoy Anderson. Sept., 1900.
184. The grape root-worm: A new grape pest in New York. By M. V. Slingerland. Nov., 1900.
185. The common European praying mantis: A new beneficial insect in America. By M. V. Slingerland. Nov., 1900.

186. The sterile fungus Rhizoctonia as a cause of plant diseases in America. By B. M. Duggar and F. C. Stewart. Jan., 1901. Identical with New York State Sta. Bul. 186.
187. The palmer-worm (*Ypsolophus pometellus* Harris). By M. V. Slingerland. Jan., 1901.
188. Spray calendar. Mar., 1901. Supersedes 114; for later revisions see 217.
189. Oswego strawberries. By L. H. Bailey. Apr., 1901.
190. Three unusual strawberry pests and a greenhouse pest. By M. V. Slingerland. May, 1901.
191. Tillage experiments with potatoes. By J. L. Stone. June, 1901.
192. Further experiments against the peach-tree borer. By M. V. Slingerland. June, 1901.
193. Studies of some shade tree and timber destroying fungi. By G. F. Atkinson. June, 1901.
194. The Hessian fly: Its ravages in New York in 1901. By I. P. Roberts, M. V. Slingerland, and J. L. Stone. Aug., 1901.
195. Further observations upon ropiness in milk and cream. By A. R. Ward. Nov., 1901.
196. Fourth report on potato culture. By L. A. Clinton. Nov., 1901.
197. Investigations concerning the germicidal action in cow's milk. By O. F. Hunziker. Dec., 1901.
198. Orchard cover crops. By John Craig. Jan., 1902.
199. Separator skimmed milk as food for pigs. By L. A. Clinton. Mar., 1902.
200. Muskmelons. By John Craig. Mar., 1902.
201. Buying and using commercial fertilizers. By L. A. Clinton. Apr., 1902.
202. Trap-lanterns, or "moth catchers". By M. V. Slingerland. June, 1902. Issued in two forms, one of which contains an appendix, p. 227–241.
203. The care and handling of milk. By O. F. Hunziker. July, 1902.
204. Cooperative experiments on the cost of egg production. By H. H. Wing. July, 1902.
205. Shade trees. By W. A. Murrell. Sept., 1902.
206. Sixth report of extension work. By John Craig. Oct., 1902.
207. Pink rot, an attendant of apple scab. By John Craig and J. M. Van Hook. Nov., 1902.
208. The grape root-worm or grape-vine Fidia: Further experiments and cultural suggestions (*Fidea viticida* Walsh). By M. V. Slingerland.—The vineyard. By John Craig. Dec., 1902.
209. Distinctive characteristics of the species of the genus Lecanium. By W. C. Thro. Jan., 1903.
210. Commercial bean growing in New York. By J. L. Stone. Jan., 1903.
211. Cooperative poultry experiments: The yearly record of three flocks. By H. H. Wing. June, 1903.
212. Second report on cooperative records of the cost of producing eggs. By H. H. Wing. Sept., 1903.
213. Methods of milking. By H. H. Wing and J. A. Foord. Sept., 1903.
214. The ribbed cocoon-maker of the apple (*Bucculatrix pomifoliella* Clemens). By M. V. Slingerland and Philena B. Fletcher. Dec., 1903.
215. The grape leaf hopper (*Typhlocyba comes* Say). By M. V. Slingerland. Jan., 1904.
216. Spraying experiments: I. Spraying for wild mustard. By J. L. Stone.—II, The dust spray. By John Craig.—Also, an outline of cooperative demonstrations and tests for 1904. Feb., 1904.
217. Spray calendar. Mar., 1904. Supersedes 188: see also 245.
218. Onion blight. By H. H. Whetzel. Apr., 1904.
219. Diseases of ginseng. By J. M. Van Hook. June, 1904.
220. Skimmed milk for pigs. By H. H. Wing. June, 1904.
221. Alfalfa in New York. By J. L. Stone. July, 1904.
222. Record of an attempt to increase the fat in milk by means of liberal feeding. By H. H. Wing and J. A. Foord. Sept., 1904.
223. The grape-berry moth (*Polychrosis viteana* Clemens). By M. V. Slingerland. Nov., 1904.
224. Two grape pests: Effective spraying for the grape root-worm; a new grape enemy, the grape blossom-bud gnat. By M. V. Slingerland and Fred Johnson. Nov., 1904.
225. Bovine tuberculosis. By V. A. Moore. Feb., 1905.
226. An apple orchard survey of Wayne County, N. Y. under the direction of John Craig: The apple industry. By G. F. Warren.—Geology. By W. E. McCourt. Mar., 1905.
227. Mushroom growing for amateurs. By G. F. Atkinson and Robert Shore. Mar., 1905.
228. Potato growing in New York. By J. L. Stone. Apr., 1905.
229. An apple orchard survey of Orleans County. By G. F. Warren. May, 1905.
230. Quality in potatoes. By J. W. Gilmore. June, 1905.
231. Second report on the forcing of strawberries; notes on the forcing of tomatoes, cucumbers, and melons. By C. E. Hunn and John Craig. Aug., 1905.
232. Experiments on the influence of fertilizers upon the yield of timothy hay when grown on Dunkirk clay loam in Tompkins County, N. Y. By J. W. Gilmore and Samuel Fraser. Aug., 1905.
233. Two new shade-tree pests; sawfly leaf-miners on European elms and alder. By M. V. Slingerland. Oct., 1905.
234. The bronze birch borer (*Agrilus anxius* Gory), an insect destroying the white birch. By M. V. Slingerland. Jan., 1906.
235. Cooperative spraying experiments. By M. V. Slingerland. Jan., 1906.
236. The blight canker of apple trees. By H. H. Whetzel. Feb., 1906.
237. Alfalfa, a report of progress: also an outline of cooperative demonstrations for 1906. By J. L. Stone [and others]. Mar., 1906.
238. Buckwheat. By J. L. Stone. Apr., 1906.
239. Some diseases of beans. By H. H. Whetzel. Apr., 1906.
240. The influence of mushrooms on the growth of some plants. By G. F. Atkinson. June, 1906.
241. Second report on the influence of fertilizers on the yield of timothy hay. By J. W. Gilmore and C. F. Clark. Sept., 1906.
242. Cabbage for stock feeding. By Samuel Fraser.—List of cooperative tests for 1907. Dec., 1906.
243. Root crops for stock feeding. By Samuel Fraser [and others]. Dec., 1906.
244. Cultures and varieties of roots for stock feeding. By Samuel Fraser [and others]. Jan., 1907.
245. Spray calendar. Feb., 1907. Supersedes 217.
246. A gasoline-heated colony brooder house. By J. E. Rice and R. C. Lawry. May, 1907.
247. The importance of nitrogen in the growth of plants. By T. F. Hunt. June, 1907.
248. New poultry appliances. By J. E. Rice and R. C. Lawry. July, 1907.
249. Comparison of four methods of feeding early hatched pullets. By J. E. Rice. Sept., 1907.
250. Bovine tuberculosis. By V. A. Moore. Jan., 1908.
251. Plant-breeding for farmers. By H. J. Webber. Feb., 1908.
252. Insect pests and plant diseases: Spraying. By John Craig.—Insects and their control; insecticides. By M. V. Slingerland and C. R. Crosby.—The control of plant diseases. By H. H. Whetzel and F. C. Stewart.—Fungicides. By H. H. Whetzel and C. S. Wilson. Mar., 1908.
253. The black-rot of the grape, and its control. By Donald Reddick and C. S. Wilson. Apr., 1908.
254. Drainage in New York. By E. O. Fippin. May, 1908.
255. Bean anthracnose. By H. H. Whetzel. May, 1908.
256. Street trees: Their care and preservation. By A. D. Taylor. June, 1908.
257. Defects in American cheddar cheese. By C. A. Publow. Aug., 1908.
258. The molting of fowl. By J. E. Rice, Clara Nixon, and C. A. Rogers. Sept., 1908.

259. The peony. By J. E. Coit. Nov., 1908.
260. American varieties of beans. By C. D. Jarvis. Nov., 1908.
261. Third report on the influence of manures on the yield of timothy hay. By J. A. Bizzell and J. O. Morgan. Dec., 1908.
262. Apple orchard survey of Niagara County, under the direction of John Craig. By M. B. Cummings. Jan., 1909.
263. Necrosis of the grape vine. By Donald Reddick. Feb., 1909.
264. Experiments in the growth of clover on farms where it once grew but now fails. By J. H. Squires. Mar., 1909.
265. On certain seed-infesting chalcis flies. By C. R. Crosby. Apr., 1909.
266. The black rot of the grape and its control: Second report. By C. S. Wilson and Donald Reddick. May, 1909.
267. Fertilizer and seeding experiments with root crops. By C. F. Clark and E. R. Minns. May, 1909.
268. The substitution of roots for concentrated foods in rations for milk production. By E. S. Savage. June, 1909.
269. Substitutes for skimmed milk in raising calves. By E. S. Savage and G. W. Tailby, jr. July, 1909. See 304.
270. Fancy cheeses for the farm and factory. By C. A. Publow. Dec., 1909.
271. The incomes of 178 New York farms. By M. C. Burritt. Dec., 1909.
272. Fire blight of pears, apples, quinces, etc. By H. H. Whetzel and V. B. Stewart. Dec., 1909.
273. The effect of fertilizers applied to timothy on the corn crop following it. By T. L. Lyon and J. O. Morgan. Feb., 1910.
274. Building poultry houses. By J. E. Rice and C. A. Rogers. Apr., 1910.
275. Effect of steam sterilization on the water-soluble matter in soils. By T. L. Lyon and J. A. Bizzell Apr., 1910.
276. Peach-leaf curl. By Errett Wallace and H. H. Whetzel. Apr., 1910.
277. The principles of brooding; the improved New York State gasoline-heated colony-house brooding system. By J. E. Rice and G. A. Rogers. May, 1910.
278. Classification of the peony: Third report. By L. D. Batchelor. May, 1910.
279. Variation and correlation in timothy. By C. F. Clark. July, 1910.
280. Pastures in New York: I, New York pastures. By P. J. White.—II, The Preswick pasture. By P. J. White.—III, The Roberts pasture. By I. P. Roberts.—IV, The cost of pasture land in different States. By G. F. Warren. July, 1910.
281. Butter moisture-tests. By H. E. Ross. Aug., 1910.
282. Seven methods of feeding young chickens. By J. E. Rice and Clara Nixon. Aug., 1910.
283. The control of insect pests and plant diseases: Insects and their control; insecticides. By M. V. Slingerland, G. W. Herrick and C. R. Crosby.—The control of plant diseases. By H. H. Whetzel. Fungicides.—General plan for spraying the apple orchard.—General plan for spraying the peach orchard. Aug. 1910. Revised. June, 1915.
284. Labor-saving poultry appliances. By J. E. Rice and C. A. Rogers. Nov., 1910.
285. The cause of "apoplexy" in winter-fed lambs. By H. H. Wing. Nov., 1910.
286. The snow-white linden moth (*Eunomos subsignarius* Hübn.). By G. W. Herrick. Nov., 1910.
287. Correlation of characters in corn. By E. C. Ewing. Dec., 1910.
288. Spray injury induced by lime-sulfur preparations. By Errett Wallace. Dec., 1919.
289. Lime-sulfur as a summer spray. By Errett Wallace. Jan., 1911.
290. Studies of the fungicidal value of lime-sulfur preparations. By Errett Wallace, F. M. Blodgett, and L. R. Hesler. Jan., 1911.
291. The apple red bugs, *Heterocordylus malinus* Reuter and *Lygidea mendax* Reuter. By C. R. Crosby and C. S. Wilson. Jan., 1911. Revised. Feb., 9 1915.
292. Cauliflower and brussels sprouts on Long Island. By L. B. Judson. Mar., 1911.
293. The black rot disease of grapes. By Donald Reddick. Mar., 1911.
294. A heretofore unnoted benefit from the growth of legumes. By T. L. Lyon and J. A. Bizzell. Mar., 1911.
295. An agricultural survey: Townships of Ithaca, Dryden, Danby, and Lansing, Tompkins County, New York. By G. F. Warren [and others]. Mar., 1911. See 302.
296. Spraying for black rot of the grape in a dry season. By Donald Reddick, C. S. Wilson, and C. T. Gregory. May, 1911.
297. Studies of variation in plants. By H. H. Love. May, 1911.
298. The packing of apples in boxes. By C. S. Wilson. May, 1911.
299. The elimination of tubercle bacilli from infected cattle, and the control of bovine tuberculosis and infected milk. By V. A. Moore. May, 1911.
300. The cabbage aphis, *Aphis brassicae* Linn. By G. W. Herrick and J. W. Hungate. May, 1911.
301. Sweet pea studies, I. By John Craig and A. C. Beal. May, 1911.
302. Notes from the agricultural survey in Tompkins County. By G. F. Warren and K. C. Livermore. June, 1911. Popular edition of 295.
303. The cell content of milk. By H. E. Ross. July, 1911.
304. Substitutes for skimmed milk in raising calves, with supplement showing later development. By E. S. Savage and G. W. Tailby, jr. Oct., 1911. Revision and extension of 269.
305. The cause of "apoplexy" in winter-fed lambs. By H. H. Wing. Oct., 1911.
306. Classification of the peony. Fourth report. L. D. Batchelor. Nov., 1911.
307. An apple orchard survey of Ontario County. By H. M. Martin. Nov., 1911.
308. The plum leaf miner *Nepticula slingerlandella* Kearfott. By C. R. Crosby. Dec., 1911.
309. The production of "hothouse" lambs. By E. S. Savage and G. W. Tailby, jr. Jan., 1912.
310. Soy beans as a supplementary silage crop. By E. R. Minns. Feb., 1912.
311. The fruit-tree leaf-roller. By G. W. Herrick. Feb., 1912.
312. Germination of seed as affected by sulphuric acid treatment. By H. H. Love and C. E. Leighty. Mar., 1912.
313. The production of new and improved varieties of timothy. By H. J. Webber [and others]. Apr., 1912.
314. Cooperative tests of corn varieties. By E. R. Minns. May, 1912.
315. Fungus flora of the soil. By C. N. Jensen. June, 1912.
316. Frosts in New York. By W. M. Wilson. June, 1912.
317. Further experiments on the economic value of root crops for New York. By E. R. Minns. Sept., 1912.
318. Constitutional vigor in poultry. By C. A. Rogers. Sept., 1912.
319. Sweet pea studies: II, Winter-flowering sweet peas. By A. C. Beal. Sept., 1912.
320. Sweet pea studies: III, Culture of the sweet pea. By A. C. Beal. Sept., 1912.
321. Computing rations for farm animals. By E. S. Savage. Oct., 1912. Revised Oct., 1916. Supersedes 154.
322. The larch case-bearer (*Coleophora laricella* Hbn.). By G. W. Herrick. Nov., 1912.
323. A study of feeding standards for milk production. By E. S. Savage. Dec., 1912.

324. A study of the biology of the apple maggot (*Rhagoletis pomonella*), together with an investigation of methods of control. By J. F. Illingworth. Dec., 1912.
325. Cherry fruit flies and how to control them. (*Rhagoletis cingulata* Loew) (*Rhagoletus fausta* O. S.). By J. F. Illingworth. Dec., 1912.
326. Water-soluble matter in soils sterilized and reinoculated. By T. L. Lyon and J. A. Bizzell. Jan., 1913.
327. Methods of chick feeding. By Clara Nixon. Feb., 1913.
328. Hop mildew. By F. H. Blodgett, Mar., 1913. See also New York State Sta. Bul. 395.
329. The fire blight disease in nursery stock. By V. B. Stewart. Apr., 1913.
330. Respiration of fruits and growing plant tissues in certain gases, with reference to ventilation and fruit storage. By G. R. Hill, jr. Apr., 1913.
331. The asparagus miner (*Agromyza simplex* Loew) and the twelve-spotted asparagus beetle (*Crioceris duodecimpunctata* L.). By D. E. Fink. Apr., 1913.
332. Oriental pears and their hybrids. By H. R. Cox. May, 1913.
333. Control of two elm-tree pests: The elm leaf-beetle (*Galerucella luteola* Müll.); the elm-leaf miner (*Kaliosysphinga ulmi* Sund.). By G. W. Herrick. May, 1913.
334. A study of some of the factors influencing the yield and the moisture content of cheddar cheese. By W. W. Fisk. July, 1913.
335. Scab disease of apples. By Errett Wallace. Sept., 1913.
336. Distribution of moisture and salt in butter. By E. S. Guthrie and H. E. Ross. Oct., 1913.
337. The Babcock test, with special reference to testing cream. By H. E. Ross and T. J. McInerney. Oct., 1913.
338. An examination of some more productions and some less productive sections of a field. By T. L. Lyon, J. A. Bizzell, and H. J. Conn. Nov., 1913.
339. Experiments concerning the top-dressing of timothy and alfalfa. By T. L. Lyon and J. A. Bizzell. Nov., 1913.
340. Experiments in the dusting and spraying of apples. By F. M. Blodgett. Jan., 1914.
341. Crop yields and prices, and our future food supply. By G. F. Warren. Feb., 1914.
342. Sweet-pea studies: IV, Classification of garden varieties of the sweet pea. By A. C. Beal. Apr., 1914.
343. Oats for New York. By H. H. Love. Apr., 1914.
344. Agricultural surveys. By G. F. Warren. Apr., 1914.
345. A continued study of constitutional vigor in poultry. By C. A. Rogers. Apr., 1914.
346. The tarnished plant bug (*Lygus pratensis* Linnaeus). By C. R. Crosby and M. D. Leonard. June, 1914.
347. Endothia canker of chestnut. By P. J. Anderson and W. H. Rankin. June, 1914.
348. Professor Mark Vernon Slingerland. By J. H. Comstock.—A bibliography of the writings of Professor Mark Vernon Slingerland. By M. D. Leonard. June, 1914.
349. Some important factors for success in general farming and in dairy farming. By G. F. Warren. July, 1914.
350. Potato scab and sulfur disinfection. By C. D. Sherbakoff. Aug., 1914.
351. Soil survey of Orange County, New York. By G. A. Crabb and T. M. Morrison. Sept., 1914.
352. Effects of variations in moisture content on certain properties of a soil and on the growth of wheat. By F. S. Harris. Sept., 1914.
353. The interior quality of market eggs. By E. W. Benjamin. Nov., 1914.
354. Further experiments in the dusting and spraying of apples. By Donald Reddick and C. R. Crosby. Jan., 1915.
355. Two factors causing variation in the weight of print butter. By H. M. Pickerill and E. S. Guthrie Feb., 1915.
356. The control of apple insects in Clinton County. By C. R. Crosby and A. J. Mix. Mar., 1915.
357. The cost of milk production. H. A. Hopper and F. E. Robertson. Mar., 1915.
358. Some important leaf diseases of nursery stock. By V. B. Stewart. Apr., 1915.
359. Some external parasites of poultry with special reference to mallophaga, with directions for their control. By G. W. Herrick. Apr., 1915.
360. Variations in the tests for fat in cream and skimmed milk. By E. S. Guthrie and G. C. Supplee. Apr., 1915.
361. The home grounds. By E. G. Davis and R. W. Curtis. June, 1915.
362. Soil survey of Oneida County, New York. By E. T. Maxon, M. E. Carr, and E. H. Stevens. Oct., 1915.
363. Phytophthora disease of ginseng. By Joseph Rosenbaum. Oct., 1915.
364. Cost of producing milk on 174 farms in Delaware County, New York. By A. L. Thompson. Oct., 1915.
365. The taxonomic value and structure of the peach leaf glands. By C. T. Gregory. Nov., 1915.
366. Woodlot conditions in Broome County, N. Y. By F. B. Moody and John Bentley, jr. Nov., 1915.
367. The fruit-tree leaf roller (*Archips argyrospila* Walk.). By G. W. Herrick and R. W. Leiby. Dec., 1915.
368. Woodlot conditions in Dutchess County, New York. By F. B. Moody and John Bentley, jr. Dec., 1915.
369. Dusting and spraying experiments with apples. By Donald Reddick and C. R. Crosby. Jan., 1916.
370. Forest legislation in America prior to March 4, 1789. By J. P. Kinney. Jan., 1916.
371. The leaf blotch of horse-chestnut. By V. B. Stewart. Feb., 1916.
372. Reports on scale insects. By J. H. Comstock. Mar., 1916.
373. Metallic flavor in dairy products. By E. S. Guthrie. Apr., 1916.
374. Reforesting methods and results of forest planting in New York State. By B. H. Paul. Apr., 1916.
375. Possibilities of private forest management in New York State. By C. H. Guise. Apr., 1916.
376. The army-worm in New York in 1914 (*Leucania unipuncta* Haworth). By H. H. Knight, May, 1916.
377. Cost accounts on some New York farms. By C. E. Ladd. June, 1916.
378. The lesser migratory locust (*Melanoplus atlanis* Riley). By G. W. Herrick and C. H. Hadley, jr. July, 1916.
379. Black rot, leaf spot, and canker of pomaceous fruits. By L. R. Hesler. Aug., 1916.
380. The hard rot disease of gladiolus. By L. M. Massey. Sept., 1916.
381. Leaf smut of timothy. By G. A. Osner. Oct., 1916.
382. Sun-scald of fruit trees, a type of winter injury. By A. J. Mix. Oct., 1916.
383. The pine bark beetle (*Ips pini* Say). By W. A. Clemens. Oct., 1916.
384. Some effects of oxygen and carbon dioxide on nitrification and ammonification in soils. By J. K. Plummer. Dec., 1916.
385. Dusting and spraying nursery stock. By V. B. Stewart. Jan., 1917.
386. Physiological studies of *Bacillus radicicola* of soybean (*Soja max* Piper) and of factors influencing nodule production. By J. K. Wilson. Jan., 1917.
387. Studies on clubroot of cruciferous plants. By Charles Chupp. Mar., 1917.
388. The poplar and willow borer (*Cryptorhynchus lapathi* Linnaeus). By Robert Matheson. Apr., 1917.
389. Clarification of milk. By T. J. McInerney. Apr., 1917.

390. Three cedar rust fungi, their life histories and the diseases they produce. By J. L. Weimer. May, 1917.
391. A revision of the genus Lygus as it occurs in America north of Mexico, with biological data on the species from New York. By H. H. Knight. May, 1917.
392. Heredity studies in the morning-glory (*Ipomoea purpurea* [L.] Roth). By E. E. Barker. July, 1917.
393. Factors influencing the abscission of flowers and partially developed fruits of the apple (*Pyrus malus* L.), By A. J. Heinicke. July, 1917.
394. The decomposition of sweet clover (*Melilotus alba* Desr.) as a green manure under greenhouse conditions. By L. A. Maynard. Nov., 1917.
395. The anthracnose disease of the raspberry and related plants. By W. H. Burkholder. Nov., 1917.
396. An investigation of the scarring of fruit caused by apple redbugs. By H. H. Knight. Feb., 1918.
397. The refinement of feeding experiments for milk production by the application of statistical methods. By L. A. Maynard and W. I. Myers. Apr., 1918.
398. Feed consumed in milk production. By H. A. Hopper, H. M. Bowen, and F. S. Barlow. Oct., 1918.
399. Experiments in fertilizing a crop rotation. By T. L. Lyon. Feb., 1919.
400. A comparison of fat tests in milk as determined by a cow-testing association and by a creamery. By H. C. Troy. Jan., 1920.
401. A comparative study of some methods for determining the fat content of skim milk. By T. J. McInerney and H. C. Troy. Jan., 1920.
402. The apple maggot in New York (*Rhagoletis pomonella* Walsh). By G. W. Herrick. Mar., 1920.

MEMOIRS.

1. Some relations of certain higher plants to the formation of nitrates in soils. By T. L. Lyon and J. A. Bizzell. July, 1913.
2. The action of certain nutrient and nonnutrient bases on plant growth: The antitoxic action of certain nutrient and nonnutrient bases with respect to plants; the toxicity of manganese and the antidotal relations between this and various other cations with respect to green plants; toxicity of various cations. By M. M. McCool. Aug., 1913.
3. Variation and correlation of oats (*Avena sativa*): I, Studies showing the effect of seasonal changes on biometrical constants. By H. H. Love and C. E. Leighty. Aug., 1914.
4. Variation and correlation of oats (*Avena sativa*): II, Effect of differences in environment, varieties, and methods on biometrical constants. By C. E. Leighty. Sept., 1914.
5. Physiological studies of *Bacillus radicicola* of Canada field pea. By M. J. Prucha. Mar., 1915.
6. Fusaria of potatoes. By C. D. Sherbakoff. May, 1915.
7. Senile changes in leaves of *Vitis vulpina* L. and certain other plants. By H. M. Benedict. June, 1915
8. A bacterial disease of stone fruits. By F. M. Rolfs. July, 1915.
9. Influence of certain carbohydrates on green plants. By Lewis Knudson. July, 1916.
10. A classification of the varieties of cultivated oats. By W. C. Etheridge. Oct., 1916.
11. Biology of the Membracidae of the Cayuga Lake basin. By W. D. Funkhouser. June, 1917.
12. Lysimeter experiments: Records for tanks 1 to 12 during the years 1910–1914, inclusive. By T. L. Lyon and J. A. Bizzell. June, 1918.
13. Chlorophyll inheritance in maize. By E. W. Lindstrom. Aug., 1918.
14. Stimulation of root growth in cuttings by treatment with chemical compounds. By O. F. Curtis. Aug., 1918.
15. Insects injurious to the hop in New York with special reference to the hop grub and the hop redbug. By I. M. Hawley. Nov., 1918.
16. A fifth pair of factors, *Aa*, for aleurone color in maize, and its relation to the *Cc* and *Rr* pairs. By R. A. Emerson. Nov., 1918.
17. The translocation of calcium in a soil. By B. D. Wilson. Dec., 1918.
18. A study of bacteria in ice cream during storage. By H. B. Ellenberger. Jan., 1919.
19. The effect of manganese compounds on soils and plants. By E. P. Deatrick. Feb., 1919.
20. The physiological action of nitrobenzene vapor on animals. By W. L. Chandler. Mar., 1919.
21. Studies in the reversibility of the colloidal condition of soils. By A. B. Beaumont. Apr., 1919.
22. An analysis of the costs of growing potatoes. By D. S. Fox. May, 1919.
23. The inheritance of the weak awn in certain Avena crosses and its relation to other characters of the oat grain. By A. C. Fraser. June, 1919.
24. A study of the plant lice injuring the foliage and fruit of the apple. By Robert Matheson. June, 1919.
25. The crane flies of New York: I, Distribution and taxonomy of the adult flies. By C. P. Alexander. June, 1919.
26. The dry root rot of the bean. By W. H. Burkholder. June, 1919.
27. The influence of low temperature on soil bacteria. By A. F. Vass. June, 1919.
28. Cooperative marketing in the Chautauqua-Erie grape industry. By H. D. Phillips.—App. I, New York State laws relating to cooperative organizations.—App. II, Amendments to State and Federal antitrust laws which affect cooperative associations organized in New York State. Sept., 1919.
29. The lecithin content of butter and its possible relationship to the fishy flavor. By G. C. Supplee. Nov., 1919.
30. Phosphorus in butter. By J. T. Cusick. Apr., 1920.
31. A study of selections for the size, shape, and color of hens' eggs. By E. W. Benjamin. May, 1920.
32. The carbon dioxide of the soil air. By H. W. Turpin. Apr., 1920.
33. The ribbed pine borer. By W. N. Hess. May, 1920.
34. An economic study of farm layout. By W. I. Myers. June, 1920.
35. Some effects of potassium salts on soils. By R. S. Smith. June, 1920.
36. Resistance of the roots of some fruit species to low temperature. By D. B. Carrick. June, 1920.
37. A modified Babcock method for determining fat in butter. By N. W. Hepburn. June, 1920.
38. The crane-flies of New York: II, Biology and phylogeny. By C. P. Alexander. June, 1920.

New York Agricultural Experiment Station, Geneva.

BULLETINS [FIRST SERIES].[13]

1. [Outline of experiments in progress.] By E. L. Sturtevant. July 24, 1882.
2. [Experiments with seed potatoes cut in different ways.] By E. L. Sturtevant. July 29, 1882.
3. [Corn experiments; root system of the potato plant; analyses of pigweed (*Chenopodium album*).] By E. L. Sturtevant. Aug. 5, 1882.
4. [Condition of crops on the station farm; results of wheat experiments.] By E. L. Sturtevant. Aug. 12, 1882.

[13] Bulletins 1–115 of this series were printed as newspaper slips.

5. [Effect of tillage upon the rate of evaporation; variety tests of peas, cabbage, and tomatoes; analysis of the root of red weed (*Amaranthus retroflexus*).] By E. L. Sturtevant. Aug. 19, 1882.
6. [Experiments with corn, potatoes, sorghum, cabbage, and squash; the cabbage worm.] By E. L. Sturtevant. Aug. 26, 1882.
7. [Yield of potatoes from seed cut in different ways; Pacy's ray grass; *Soja hispida* or Japanese bean; analyses of cowpeas.] By E. L. Sturtevant. Sept. 2, 1882.
8. [Sorghum, teosinte, pearl millet, Chinese bean, cowpeas; tomato rot; varieties of peas.] By E. L. Sturtevant. Sept. 9, 1882.
9. [Sorghum; dhoura; filling the silo with corn; effect of tillage on evaporation; cucumbers.] By E. L. Sturtevant. Sept. 16, 1882.
10. [Soja bean; pasture grasses; improvement of seed wheat; analysis of the tomato; sugar in the stalks of field corn.] By E. L. Sturtevant. Sept. 23, 1882.
11. [Prolificacy of plants.] By E. L. Sturtevant. Sept. 30, 1882.
12. [Variety tests of barley; specimens of corn desired for the museum.] By E. L. Sturtevant. Oct. 7, 1882.
13. [Experiments with butt and tip kernels for seed in fertilized and unfertilized soil.] By E. L. Sturtevant. Oct. 14, 1882.
14. [A retrospect of the summer's work: the Christiana melon.] By E. L. Sturtevant. Oct. 20, 1882.
15. [Corn hybridization; cultivation experiments.] By E. L. Sturtevant. Oct. 28, 1882.
16. [Variety tests of cabbage; insecticides for the cabbage worm.] By E. L. Sturtevant. Nov. 4, 1882.
17. [Root systems of plants in relation to fertilizer requirements.] By E. L. Sturtevant. Nov. 10, 1882.
18. [Experiments with seed potatoes cut in different ways.] By E. L. Sturtevant. Nov. 24, 1882.
19. [Potato culture.] By E. L. Sturtevant. Nov. 25, 1882.
20. [Clover sickness.] By E. L. Sturtevant.—Tobacco in Onondaga and adjacent counties. By J. F. Greene. Dec. 2, 1882.
21. [Amber cane.] By E. L. Sturtevant. Dec. 9, 1882.
22. [Sugar from corn stalks.] By E. L. Sturtevant. Dec. 16, 1882.
23. [Seed testing.] By E. L. Sturtevant. Dec. 23, 1882.
24. [The germination of butt, tip, and central kernels of corn.] By E. L. Sturtevant. Dec. 30, 1882.
25. [Milk analyses.] By E. L. Sturtevant. Jan. 6, 1883.
26. [Corn germination experiments.] By E. L. Sturtevant. Jan. 13, 1883.
27. [Suggestions for cooperative experiments with corn.] By E. L. Sturtevant. Jan. 20, 1883.
28. [Potato experiments.] By E. L. Sturtevant. Jan. 27, 1883.
29. [Seed improvement; sorghum; cowpeas; soja beans.] By E. L. Sturtevant. Feb. 3, 1883.
30. [Improvement of varieties.] By E. L. Sturtevant. Feb. 10, 1883.
31. [Planting corn from different parts of the ear.] By E. L. Sturtevant. Feb. 17, 1883.
32. [Corn culture.] By E. L. Sturtevant. Feb. 24, 1883.
33. [Influence of feeds upon the composition of milk.] By E. L. Sturtevant. Mar. 3, 1883.
34. [Feeding experiments with cows.] By E. L. Sturtevant. Mar. 10, 1883.
35. [Effect of feed upon the yield of milk.] By E. L. Sturtevant. Mar. 13, 1883.
36. [Feeding experiments with cows.] By E. L. Sturtevant. Mar. 24, 1883.
37. [Digestibility of corn silage.] By E. L. Sturtevant. Mar. 31, 1883.
38. [Effect of using seed from different parts of the plant.] By E. L. Sturtevant. Apr. 7, 1883.
39. [Tests of seeds.] By E. L. Sturtevant. Apr. 14, 1883.
40. [The weather during the winter of 1882–83.] By E. L. Sturtevant. Apr. 21, 1883.
41. [The cutting of seed potatoes.] By E. L. Sturtevant. Apr. 28, 1883.
42. [Fertilizer analyses.] By E. L. Sturtevant. May 5, 1883.
43. [Observations on cross fertilization.] By E. L. Sturtevant. May 12, 1883.
44. [Variations in seedling plants.] By E. L. Sturtevant. May 19, 1883.
45. [Germination tests of wheat.] By E. L. Sturtevant. May 26, 1883.
46. [Variations in pop-corn.] By E. L. Sturtevant. June 2, 1883.
47. [The germinative strength of corn.] By E. L. Sturtevant. June 9, 1883.
48. [Experiments with insecticides.] By E. L. Sturtevant. June 16, 1883.
49. [Grass experiments.] By E. L. Sturtevant. June 23, 1883.
50. [Seed improvements.] By E. L. Sturtevant. June 29, 1883.
51. [Principles of seed selection.] By E. L. Sturtevant. July 7, 1883.
52. [Variety tests of peas.] By E. L. Sturtevant. July 14, 1883.
53. [Variety studies.] By E. L. Sturtevant. July 21, 1883.
54. [Peach leaf curl.] By E. L. Sturtevant. July 28, 1883.
55. [Varieties of corn.] By E. L. Sturtevant. Aug. 4, 1883.
56. [Value of soil analysis.] By E. L. Sturtevant. Aug. 11, 1883.
57. [Ash analysis of the corn plant.] By E. L. Sturtevant. Aug. 18, 1883.
58. [Analyses of plantain and ox-eye daisy.] By E. L. Sturtevant. Aug. 25, 1883.
59. [Variations in plants.] By E. L. Sturtevant. Sept. 5, 1883.
60. [Proposed corn nomenclature.] By E. L. Sturtevant. Sept. 8, 1883.
61. [Root pruning of barley.] By E. L. Sturtevant. Sept. 15, 1883.
62. [Seed tests.] By E. L. Sturtevant. Sept. 22, 1883.
63. [Experiments with insecticides.] By E. L. Sturtevant. Sept. 29, 1883.
64. [Experiments with potato seed from different parts of the tuber.] By E. L. Sturtevant. Oct. 6, 1883.
65. [Mulching potatoes.] By E. L. Sturtevant. Oct. 13, 1883.
66. [Plat experiments with potatoes.] By E. L. Sturtevant. Oct. 20, 1883.
67. [Other crops with corn.] By E. L. Sturtevant. Nov. 3, 1883.
68. [Sunflowers.] By E. L. Sturtevant. Nov. 10, 1883.
69. [Variety tests of potatoes.] By E. L. Sturtevant. Nov. 17, 1883.
70. [Analyses of the corn kernel.] By E. L. Sturtevant. Nov. 24, 1883.
71. [Effect of fertilizers upon the composition of tobacco.] By E. L. Sturtevant. Dec. 1, 1883.
72. [Variations in corn due to cross-fertilization.] By E. L. Sturtevant. Dec. 8, 1883.
73. [Analyses of corn, alfalfa, orchard grass, and hay.] By E. L. Sturtevant. Dec. 15, 1883.
74. [Experiments with seed corn.] By E. L. Sturtevant. Dec. 22, 1883.
75. [Apple maggot.] By J. A. Lintner. Dec. 29, 1883.
76. Maize. Jan. 5, 1883 [i. e. 1884].
77. [Onions; strawberries; root system of cauliflower.] By E. L. Sturtevant. Jan. 12, 1883 [i. e. 1884].
78. [Sorghum: yield and chemical composition.] By E. L. Sturtevant. Jan. 19, 1883 [i. e. 1884].
79. [Coal ashes.] By E. L. Sturtevant. Feb. 23, 1883.
80. [Influence of climate upon the action of fertilizer in its relation to crop.] By E. L. Sturtevant. Mar. 8, 1884.
81. [Celery; tomatoes.] By E. L. Sturtevant. Mar. 22, 1884.
82. [Corn analyses.] By E. L. Sturtevant. Apr. 5, 1884.

83. [Varieties of sweet corn.] By E. L. Sturtevant. Apr. 12, 1884.
84. [Feeding silage to cows.] By E. L. Sturtevant. Apr. 26, 1884.
85. [Digestibility of corn fodder and the same ensilage.] By E. L. Sturtevant. Apr. 26, 1884.
86. [Corn cutworms.] By J. A. Lintner. May 31, 1884.
87. [Varieties of early peas.] By E. L. Sturtevant. July 2, 1884.
88. [Insecticides for the turnip flea-beetle (*Haltica striolata*) and the radish fly (*Anthomya radicum*).] By E. L. Sturtevant. July 9, 1884.
88. [i. e. 89.] [Cross fertilization of beans.] By E. L. Sturtevant. July 16, 1884.
88. [i. e. 90.] [Insecticides.] By E. L. Sturtevant. July 23, 1884.
91. [Varieties of vegetables.] By E. L. Sturtevant. July 30, 1884.
92. [Pear blight.] By J. C. Arthur. Aug. 6, 1884.
93. [Corn analyses.] By E. L. Sturtevant. Aug. 13, 1884.
94. [Varieties of raspberries.] By E. S. Goff. Aug. 20, 1884.
95. [Ripe versus immature seed.] By E. L. Sturtevant. Aug. 27, 1884.
[96]. [List of station products exhibited at the New York State Agricultural Society's fair, Sept. 4–10, 1884.] By E. L. Sturtevant.
97. Smut in oats. By E. L. Sturtevant. Sept. 6, 1884.
98. [Vareities of tomatoes.] By E. L. Sturtevant. Sept. 13, 1884.
99. [Hybridized barley.] By E. L. Sturtevant. Sept. 27, 1884.
95. [i. e. 100.] [An insect new to the State, *Isosoma tritici*.] By J. A. Lintner. Oct. 4, 1884.
101. [The root systems of certain vegetables.] By E. L. Sturtevant. Oct. 11, 1884.
102. [Varieties of oats.] By E. L. Sturtevant. Oct. 22, 1884.
103. [Calculation of yield of corn per acre.] By E. L. Sturtevant. Nov. 5, 1884.
104. [Effect of brewers' grains on the composition of milk.] By E. L. Sturtevant. Nov. 12, 1884.
105. [Varieties of barley.] By E. L. Sturtevant. Nov. 19, 1884.
106. Influence of acid and putrefactive food upon cows and their milk; Brewers' grains. By E. L. Sturtevant. Nov. 22, 1884.
107. [The policy of the station.] By E. L. Sturtevant. Jan. 3, 1885.
108. [Variability in the yield of potatoes.] By E. L. Sturtevant. Jan. 10, 1885.
109. [Selection of seed potatoes.] By E. L. Sturtevant. Jan. 17, 1885.
110. Influence of feeding acid food to cows: Corn feed or slump. By E. L. Sturtevant. Feb. 14, 1885.
111. [Causes of the failure of corn to germinate.] By E. L. Sturtevant. Mar. 18, 1885.
112. [Experiments with dried seed corn.] By E. L. Sturtevant. Apr. 11, 1885.
113. [Nomenclature of feeding stuffs which are by-products from glucose and starch factories.] By E. L. Sturtevant. Apr. 18, 1885.
114. [Influence of feeding acid food to cows: Dry feed with acetic acid.] By E. L. Sturtevant. Apr. 25, 1885.
115. The absorption of the seed tuber of the potato during growth of the plant. [By E. S. Goff.] Mar. 18, 1885.

BULLETINS (NEW SERIES).

1. [Mason's high grade potash fertilizer.] By E. L. Sturtevant. July 18, 1885. (No. 116, old series.)
2. [Pear blight.] By J. C. Arthur. Aug. 24, 1885.
3. [Varieties of vegetables exhibited by the station at the New York State Agricultural Society's fair.] By E. L. Sturtevant. Sept. 10, 1885.
4. [Varieties of oats.]. By E. L. Sturtevant. Sept. 26, 1885.
5. Cooked versus raw food for stock. By E. F. Ladd. Oct. 23, 1885.
6. Hay versus damaged hay. By E. L. Sturtevant. Nov. 5, 1885.
7. Slug shot. By E. L. Sturtevant. Mar. 18, 1886.
8. [Kiln dried seed corn.] By E. L. Sturtevant. Apr. 15, 1886.
9. Was it poison or overfeeding. By E. L. Sturtevant. Mar. 1, 1887.
10. General outline of work: Influence of fertilizers on the chemical composition of plants; analyses of feeding stuffs; feeding and digestion experiments. By E. F. Ladd. Aug., 1888.
11. Experiments in cultivation; experiment in root growth; experiment with fertilizers: experiments with insecticides; experiments with fungicides; experiments with the potato: experiments with sorghum. By E. S. Goff. Sept., 1888.
12. Digest of the fertilizer laws in several States; statistics of fertilizers; the Maynard bill. Sept., 1888.
13. Farm and field experiments. By F. E. Emery. Sept., 1888.
14. Chemical composition of some feeding-stuffs. By E. F. Ladd. Oct., 1888.
15. Methods adopted for the systematic testing of new fruits: a circular to the originators or proprietors of new fruits; a list of fruits now under trial at the station. By E. S. Goff. Nov., 1888.
16. A study of the corn plant; lucerne or alfalfa. [By E. F. Ladd.] July, 1889.
17. Cattle foods and feeding rations. [By E. F. Ladd.] Oct., 1889.
18. Testing of dairy breeds. [By E. F. Ladd.] Nov., 1889.
19. A method for the determination of fat in milk and cream. [By E. F. Ladd and W. H. Whalen.] June, 1890.
20. Pedigrees of dairy animals under investigation. [By Peter Collier.] June, 1890.
21. Testing of dairy breeds. [By E. F. Ladd.] July, 1890.
22. Pig feeding experiments without milk. [By W. P. Wheeler.] Aug., 1890.
23. Comparative test of cows; loss in keeping manure. [By F. E. Emery.] Sept., 1890.
24. Experiments with strawberries. [By C. E. Hunn.] Oct., 1890.
25. The New York fertilizer control and fertilizer analyses: Introduction. [By L. L. Van Slyke.] Nov., 1890.
26. The New York State fertilizer control and fertilizer analyses: Outline of the history of commercial fertilizers; general principles underlying the use of fertilizers. [By L. L. Van Slyke.] Jan., 1891.
27. The New York State fertilizer control and fertilizer analyses: General principles underlying the use of fertilizers. [By L. L. Van Slyke.] Feb., 1891.
28. Pig feeding experiments with coarse foods. [By W. P. Wheeler.] Apr., 1891.
29. Feeding experiment with laying hens. [By W. P. Wheeler.] Apr., 1891.
30. Cabbage and cauliflower; tomatoes. [By C. E. Hunn.] May, 1891.
31. Commercial valuation of the food and fertilizing constituents of feeding materials. [By Peter Collier.] May, 1891.
32. The New York State fertilizer control and fertilizer analyses: Description of materials used in making commercial fertilizers; fertilizing materials produced on farms; fertilizing composition and valuation of various products. [By L. L. Van Slyke.] June, 1891.
33. The New York State fertilizer control and fertilizer analyses: Explanation of terms of chemical analyses; commercial valuations of fertilizers; composition of various chemical compounds. [By L. L. Van Slyke.] July, 1891.
34. Comparison of dairy breeds of cattle with reference to production of butter. [By L. L. Van Slyke.] Aug., 1891.

35. Some of the most common fungi and insects, with preventives. [By C. E. Hunn and G. W. Churchill.] Aug., 1891.
36. Small fruits. [By C. E. Hunn.] Sept., 1891.
37. Investigation of cheese; experiments in the manufacture of cheese; influence of composition of milk on composition and yield of cheese; a study of the process of ripening of cheese. [By L. L. Van Slyke.] Nov., 1891.
38. Oyster shells as food for laying hens. [By W. P. Wheeler.] Jan., 1892.
39. Feeding experiments with poultry. [By W. P. Wheeler.] Jan., 1892.
40. Black knot of plum and cherry. [By S. A. Beach.] Mar., 1892.
41. Influence of copper compounds in soils upon vegetation; spraying with fungicides for prevention of potato blight; analyses of materials used in spraying plants. [By S. A. Beach and L. L. Van Slyke.] Apr., 1892.
42. Analyses of commercial fertilizers. [By L. L. Van Slyke.] May, 1892.
43. Experiments in the manufacture of cheese during May. [By L. L. Van Slyke.] June, 1892.
44. Strawberries. [By C. E. Hunn.] Aug., 1892.
45. Experiments in the manufacture of cheese during June. [By L. L. Van Slyke.] Aug., 1892.
46. Experiments in the manufacture of cheese. [By L. L. Van Slyke.] Sept., 1892.
47. Experiments in the manufacture of cheese: Experiments made during September; experiments made during October. [By L. L. Van Slyke.] Nov., 1892.
48. Some bean diseases. [By S. A. Beach.] Dec., 1892.
49. Treatment of potato scab; use of Bordeaux mixture for potato blight. [By S. A. Beach.] Jan., 1893.
50. Summary of results of experiments made in the manufacture of cheese during the season of 1892. [By L. L. Van Slyke.] Jan., 1893.
51. Some celery diseases. [By S. A. Beach.] Mar., 1893.
52. Analyses of commercial fertilizers. [By L. L. Van Slyke.] Mar., 1893.
53. Feeding experiments with capons. [By W. P. Wheeler.] Apr., 1893.
54. Experiments in the manufacture of cheese: Manufacture of cheese from normal milk rich in fat; study of cheese-ripening process. [By L. L. Van Slyke.] May, 1893.
55. General principles relating to the composition and use of fertilizers. [By L. L. Van Slyke.] May, 1923.
56. Experiments in the manufacture of cheese: The manufacture of Edam cheese; the manufacture of Gouda cheese. [By L. L. Van Slyke.] May, 1893.
57. Feeding experiments with laying hens; keeping males with the laying stock; observations on feather eating; general observations. [By W. P. Wheeler.] June, 1893.
58. Analyses of commercial fertilizers collected in Long Island in the spring of 1893. [By L. L. Van Slyke.] July, 1893.
59. Analyses of commercial fertilizers collected in the spring of 1893. [By L. L. Van Slyke.] Sept., 1893.
60. Investigation relating to the manufacture of cheese: I. [By L. L. Van Slyke.] Sept., 1893.
61. Investigation relating to the manufacture of cheese: II. [By L. L. Van Slyke.] Nov., 1893.
62. Investigation relating to the manufacture of cheese: III. [By L. L. Van Slyke.] Dec., 1893.
63. Some experience with blackberries, dewberries, and raspberries. [By S. A. Beach.] Dec., 1893.
64. Some experiences with strawberries; strawberry crosses. [By S. A. Beach.] Jan., 1894.
65. Investigation relating to the manufacture of cheese: Summary of the results of the work done in cheese factories during the seasons of 1892 and 1893. [By L. L. Van Slyke.] Jan., 1894.
66. Analyses of commercial fertilizers collected in the fall of 1893. [By L. L. Van Slyke.] Jan., 1894.
67. Experiments in preventing pear scab in 1893. [By S. A. Beach.] Feb., 1894.
68. Investigation relating to the manufacture of cheese: V, Fat in milk as a practical basis for determining the value of milk for cheese making. [By L. L. Van Slyke.] Mar., 1894.
69. Vegetables grown for exhibition. By S. A. Beach. Mar., 1894.
70. Some reasons why the legal milk standard of New York State should be changed. [By L. L. Van Slyke.] Apr., 1894.
71. Some reasons why there should be a legal standard for cheese in New York State. [By L. L. Van Slyke.] May, 1894.
72. Preventing leaf blight of plum and cherry nursery stock. [By S. A. Beach.] June, 1894.
73. Analyses of commercial fertilizers collected during the spring of 1894. [By L. L. Van Slyke]. July, 1894.
74. Observations on the application of fungicides and insecticides. [By S. A. Beach and Wendell Paddock.] Sept., 1894.
75. Some insects injurious to squash, melon, and cucumber vines; the asparagus beetle. [By V. H. Lowe.] Sept., 1894.
76. Notes on strawberries for 1894. [By S. A. Beach.] Oct., 1894.
77. Comparison of different breeds of dairy cattle: I, The cost of milk production. [By L. L. Van Slyke.] Nov., 1894.
78. Comparison of different breeds of dairy cattle: II, The cost of butter and cream production. By L. L. Van Slyke. Nov., 1894.
79. Comparison of different breeds of dairy cattle: III, The cost of cheese production. [By L. L. Van Slyke.] Nov., 1894.
80. Alfalfa forage for milch cows. The results from rations containing alfalfa and those obtained from some other summer rations [By W. P. Wheeler.] Nov., 1894.
81. Variety tests with blackberries, dewberries, and raspberries; raspberry anthracnose. [By S. A. Beach and Wendell Paddock.] Dec., 1894.
82. Results of investigation relating to the manufacture of cheese for the season of 1894. [By L. L. Van Slyke.] Dec., 1894.
83. Insects affecting late cabbage; notes on the stalk borer; insecticides. [By F. A. Sirrine.] Dec., 1894.
84. Spraying pear and apple orchards in 1894. [By S. A. Beach.] Jan., 1895.
85. Analyses of commercial fertilizers collected during the fall of 1894. [By L. L. Van Slyke.] Jan., 1895.
86. Treatment of common diseases and insects injurious to fruits and vegetables. [By S. A. Beach and Wendell Paddock.] Feb., 1895.
87. The San José or pernicious scale. [By F. A. Sirrine.] Mar., 1895.
88. Forcing lettuce in pots; mushrooms as a greenhouse crop. [By S. A. Beach.] Mar., 1895.
89. Comparative profits derived from selling milk, butter, cream, and cheese. [By L. L. Van Slyke.] Apr., 1895.
90. Feeding experiments with laying hens. A comparison of rations containing moistened ground grain with others containing dry whole grain. [By W. P. Wheeler.] May, 1895.
91. A new strawberry; notes on strawberries, raspberries, blackberries, and dewberries. [By S. A. Beach and Wendell Paddock.] Aug., 1895.
92. Analyses of commercial fertilizers collected during the spring of 1895. [By L. L. Van Slyke.] Oct., 1895.
93. Comparative field-test of commercial fertilizers used in raising potatoes. [By L. L. Van Slyke.] Oct., 1895.

94. The composition and use of fertilizers: Science applied to feeding plants. [By L. L. Van Slyke.] Oct., 1895.
95. Currants. By S. A. Beach. Nov., 1895.
96. Report of analyses of commercial fertilizers collected during the fall of 1895. By L. L. Van Slyke. Dec., 1895.
97. Corn silage for milch cows. By W. P. Wheeler. Dec., 1895.
98. Plum leaf spot; cherry leaf spot and fruit rot. By S. A. Beach. Jan., 1896.
99. The spinach-leaf maggot or miner. By F. A. Sirrine. Jan., 1896.
100. Combating carnation rust. By F. C. Stewart. Feb., 1896.
101. Potato diseases on Long Island in the season of 1895. By F. C. Stewart. Feb., 1896.
102. Silage and silos. By W. P. Wheeler. Mar., 1896.
103. Provisions of the new fertilizer law of New York. By L. L. Van Slyke. May, 1896.
104. Notes on the recent invasion of the army worm. By V. H. Lowe. July, 1896.
105. Effects of drouth upon milk production. By L. L. Van Slyke. Aug., 1896.
106. Feeding experiments with laying hens: The relative efficiency of whole and ground grains. By W. P. Wheeler. Aug., 1896.
107. Report of analyses of commercial fertilizers for the spring of 1896. By L. L. Van Slyke. Aug., 1896.
108. The real value of "natural plant food." By L. L. Van Slyke. Sept., 1896.
109. Strawberries. By Wendell Paddock. Sept., 1896.
110. Milk-fat and cheese yield. By L. L. Van Slyke. Oct., 1896.
111. Variety tests with blackberries, dewberries, and raspberries. By Wendell Paddock. Oct., 1896
112. Economy in using fertilizers for raising potatoes. By L. L. Van Slyke. Nov., 1896.
113. The cucumber flea-beetle as the cause of "pimply" potatoes. By F. C. Stewart. Dec., 1896.
114*. Gooseberries. By S. A. Beach. Jan. 1897.
115. Director's report for 1896. By W. H. Jordan. Jan., 1897.
116. Report of analyses of commercial fertilizers for the fall of 1896. By L. L. Van Slyke. Jan., 1897.
117*. Treatment of leaf spot in plum and cherry orchards in 1896. By S. A. Beach. Mar., 1897.
118*. Alfalfa. By W. P. Wheeler. Mar., 1897.
119*. The downy mildew of the cucumber; what it is and how to prevent it. By F. C. Stewart. Mar., 1897.
120*. A practical method of fighting cutworms in onion fields. By F. A. Sirrine. Mar., 1897.
121*. Spray pumps and spraying. By Wendell Paddock. Mar., 1897. Appendix, Mar., 1899.
122*. The pistol case-bearer. By V. H. Lowe. Apr., 1897.
123*. Spraying potatoes on Long Island in the season of 1896. By F. C. Stewart. Apr., 1897.
124*. Anthracnose of the black raspberry. By Wendell Paddock. Apr., 1897.
125*. Forcing tomatoes; comparison of methods of training and benching; note on a tomato disease. By S. A. Beach. July, 1897.
126*. Feeding experiments with chicks and capons: The relative efficiency of whole and ground grains as commonly fed. By W. P. Wheeler. Nov., 1897.
127*. Strawberries in 1897. By Wendell Paddock. Nov., 1897.
128*. Variety tests with raspberries, blackberries and dewberries. By Wendell Paddock. Nov., 1897.
129. Report of analyses of commercial fertilizers for the spring of 1897. By L. L. Van Slyke. Nov., 1897.
130*. A bacterial disease of sweet corn. By F. C. Stewart. Dec., 1897.
131*. Results with oat smut in 1897. By C. P. Close. Dec., 1897.
132*. The source of milk fat. By W. H. Jordan and C. G. Jentner. Dec., 1897.
133*. Spraying in 1897 to prevent gooseberry mildew. By C. P. Close. Dec., 1897.
134. Report of analyses of commercial fertilizers for the fall of 1897. By L. L. Van Slyke. Dec., 1897.
135. The composition and production of sugar beets: Conditions required for the successful growth of sugar beets. By L. L. Van Slyke.—The outlook for the sugar beet industry. By W. H. Jordan.—The station experiments with sugar beets. By G. W. Churchill. Dec., 1897.
136*. Inspection of nurseries and treatment of infested nursery stock. By V. H. Lowe. Dec., 1897.
137*. Commercial fertilizers for potatoes. [I] By W. H. Jordan. Dec., 1897.
138*. Experiments and observations on some diseases of plants. By F. C. Stewart. Dec., 1897.
139*. Plant lice: Description, enemies and treatment. By V. H. Lowe. Dec., 1897.
140*. Wood ashes and apple scab. By S. A. Beach. Dec., 1897.
141*. Digestion and feeding experiments: The new corn product; the calculation of the value of rations. By W. H. Jordan and C. G. Jentner. Dec., 1897.
142. Director's report for 1897. By W. H. Jordan. Dec., 1897.
143*. Cottonwood leaf beetle; green arsenite. By V. H. Lowe. Apr., 1898.
144*. A Spraying mixture for cauliflower and cabbage worms. By F. A. Sirrine. Sept., 1898.
145. Report of analyses of commerical fertilizers for the spring of 1898. By L. L. Van Slyke. Sept., 1898.
146*. Some experiments in forcing head lettuce. By S. A. Beach. Nov., 1898.
147*. Variety tests of strawberries, raspberries, and blackberries. By Wendell Paddock. Dec., 1898.
148. Report of analyses of commercial fertilizers for the fall of 1898. By L. L. Van Slyke. Dec., 1898.
149*. The economy of using animal food in poultry feeding. By W. P. Wheeler. Dec., 1898.
150*. The raspberry sawfly; preliminary notes on the grape-vine flea beetle. By V. H. Lowe. Dec., 1898.
151*. Experiments in ringing grape vines. By Wendell Paddock. Dec., 1898.
152*. Two destructive orchard insects: The apple-tree tent caterpillar; spraying experiments against the spring canker worm. By V. H. Lowe. Dec., 1898.
153. Director's report for 1898. By W. H. Jordan. Dec., 1898.
154*. Commercial fertilizers for potatoes, II. By W. H. Jordan. Dec., 1898.
155*. Sugar beet investigations in 1898. By L. L. Van Slyke. Dec., 1898.
156*. Spraying cucumbers in the season of 1898. By F. A. Sirrine and F. C. Stewart. Dec., 1898.
157*. Self-fertility of the grape. By S. A. Beach. Dec., 1898.
158*. Combating the striped beetle on cucumbers. By F. A. Sirrine. May, 1899.
159*. The forest tent-caterpillar. By V. H. Lowe. Oct., 1899.
160. Report of analyses of commercial fertilizers for the spring of 1899. By L. L. Van Slyke. Oct., 1899
161*. Treatment for gooseberry mildew. By C. P. Close. Nov., 1899.
162*. Leaf scorch of the sugar beet, cherry, cauliflower, and maple. By F. C. Stewart. Nov., 1899.
163*. The New York apple-tree canker. [First report.] By Wendell Paddock. Dec., 1899.
164*. Notes on various plant diseases. By F. C. Stewart. Dec., 1899.
165. Report of analyses of Paris green and other insecticides. By L. L. Van Slyke. Dec., 1899.
166*. Commercial feeding stuffs in New York. By W. H. Jordan and C. G. Jentner. Dec., 1899.
167*. A fruit-disease survey of the Hudson Valley in 1899. By F. C. Stewart and F. H. Blodgett. Dec., 1899.
168. Director's report for 1899. By W. H. Jordan. Dec., 1899.
169*. Fertilizing self-sterile grapes. By S. A. Beach. Dec., 1899.
170. Common diseases and insects injurious to fruits. By S. A. Beach, V. H. Lowe, and F. C. Stewart. Dec., 1899. Also revised edition.

---

* Bulletins marked with an asterisk were issued in popular form with the same or modified titles.

171*. Animal food for poultry. By W. P. Wheeler. Dec., 1899.
172*. The efficiency of a continuous pasteurizer at different temperatures. By H. A. Harding and L. A. Rogers. Dec., 1899.
173. Report of analyses of commercial fertilizers for the fall of 1899. By L. L. Van Slyke. Dec., 1899.
174. Fumigation of nursery stock. By S. A. Beach. Mar., 1900.
175. A parasite upon carnation rust. By F. H. Blodgett. Apr., 1900.
176. Inspection of concentrated commercial feeding stuffs during 1900. By W. H. Jordan and C. G. Jentner. Sept., 1900.
177. Report of analyses of commercial fertilizers for the spring and fall of 1900. By L. L. Van Slyke and W. H. Andrews. Nov., 1900.
178. Inspection of Babcock milk test bottles. By W. H. Jordan and G. A. Smith. Nov., 1900.
179. An anthracnose and a stem rot of the cultivated snapdragon. By F. C. Stewart. Nov., 1900.
180*. Miscellaneous notes on injurious insects. [I]. By V. H. Lowe. Dec., 1900.
181. A fumigator for small orchard trees. By V. H. Lowe. Dec., 1900.
182*. Experiments on the sulphur-lime treatment for onion smut. By F. A. Sirrine and F. C. Stewart. Dec., 1900.
183*. Notes on some dairy troubles. By H. A. Harding, L. A. Rogers, and G. A. Smith. Dec., 1900.
184*. The influence of the temperature of curing upon the commercial quality of cheese. By G. A. Smith. Dec., 1900.
185*. The New York apple-tree canker. (Second report.) By Wendell Paddock. Dec., 1900.
186*. The sterile fungus Rhizoctonia as a cause of plant diseases in America. By B. M. Duggar and F. C. Stewart. Jan., 1901. Identical with New York [Cornell] Sta. Bul. 186.
187*. Commercial fertilizers for potatoes, III. By W. H. Jordan. Dec., 1900.
188*. Spraying for asparagus rust: Tests with resin-Bordeaux mixture; the Downs' power asparagus sprayer. By F. A. Sirrine. Dec., 1900.
189*. A little-known asparagus pest (*Agromyza simplex* Loew). By F. A. Sirrine. Dec., 1900.
190. Report of analyses of Paris green and other insecticides in 1900. By L. L. Van Slyke and W. H. Andrews. Dec., 1900.
191*. A fruit disease survey of western New York in 1900. By F. C. Stewart, F. M. Rolfs, and F. H. Hall. Dec., 1900.
192*. The substitution of soda for potash in plant growth. By W. H. Jordan and C. G. Jentner. Dec., 1900.
193*. San José scale investigations: I, The development of the female. By V. H. Lowe and P. J. Parrott. Dec., 1900.
194*. San José scale investigations: II, Spraying experiments with kerosene oil; methods of combating the San José scale. By V. H. Lowe. Dec., 1900.
195. Director's report for 1900. By W. H. Jordan. Dec., 1900.
196*. Spraying in bloom. By S. A. Beach and L. H. Bailey. Dec., 1900.
197*. The food source of milk fat with studies on the nutrition of milch cows. By W. H. Jordan, C. G. Jentner, and F. D. Fuller. Oct., 1901.
198. Inspection of feeding stuffs, 1900–1901. By W. H. Jordan and C. G. Jentner. Nov., 1901.
199*. An epidemic of currant anthracnose. By F. C. Stewart and H. J. Eustace. Nov., 1901.
200*. Notes from the botanical department. By F. C. Stewart and H. J. Eustace. Nov., 1901.
201. Report of analyses of commercial fertilizers for the spring and fall of 1901. By L. L. Van Slyke and W. H. Andrews. Dec., 1901.
202*. San José scale investigations, III. By V. H. Lowe and P. J. Parrott. Dec., 1901.
203*. A study of enzymes in cheese. By L. L. Van Slyke, H. A. Harding, and E. B. Hart. Dec., 1901.
204. Report of analyses of Paris green and other insecticides in 1901. By L. L. Van Slyke and W. H. Andrews. Dec., 1901.
205*. Influence of manure upon sugar beets. By W. H. Jordan and G. W. Churchill. Dec., 1901.
206*. Commercial fertilizers for onions. By W. H. Jordan and F. A. Sirrine. Dec., 1901.
207*. Conditions affecting weight lost by cheese in curing. By L. L. Van Slyke. Dec., 1901.
208*. Stable manure and nitrogenous chemical fertilizers for forcing lettuce. By S. A. Beach and Heinrich Hasselbring. Dec., 1901.
209*. Treatment for San José scale in orchards: I, Orchard fumigation. By F. A. Sirrine. Dec., 1901.
210*. The immediate effect on milk-production of changes in the ration. By W. P. Wheeler. Dec., 1901.
211. Director's report for 1901. By W. H. Jordan. Dec., 1901.
212*. Miscellaneous notes on injurious insects, II. By V. H. Lowe. Apr., 1902.
213*. Treatment for San José scale in orchards: II, Spraying with kerosene and crude petroleum. By F. A. Sirrine. Apr., 1902.
214*. A study of some of the salts formed by casein and paracasein with acids: Their relations to American Cheddar cheese. By L. L. Van Slyke and E. B. Hart. July, 1902.
215*. Methods for the estimation of the proteolytic compounds contained in cheese and milk. By L. L. Van Slyke and E. B. Hart. Sept., 1902.
216. Report of analyses of commercial fertilizers for the spring and fall of 1902. By L. L. Van Slyke and W. H. Andrews. Sept., 1902.
217. Inspection of feeding stuffs. By W. H. Jordan, C. G. Jentner, and F. D. Fuller. Nov., 1902.
218*. Variety test of strawberries. By O. M. Taylor. Nov., 1902.
219*. Some of the compounds present in American Cheddar cheese. By L. L. Van Slyke and E. B. Hart. Dec., 1902.
220*. Two unusual troubles of apple foliage: Frost blisters on apple and quince leaves; spotting and dropping of apple leaves caused by spraying. By F. C. Stewart and H. J. Eustace. Dec., 1902.
221*. Potato spraying experiments in 1902. By F. C. Stewart, H. J. Eustace, and F. A. Sirrine. Dec., 1902.
222. Report of analyses of Paris green and other insecticides in 1902. By L. L. Van Slyke and W. H. Andrews. Dec., 1902.
223*. Investigations concerning the self-fertility of the grape, 1900–1902: Potency of the pollen of self-sterile grapes; influence on self-fertility of girdling or bending the canes. By S. A. Beach. Dec., 1902.
224*. Investigations concerning the self-fertility of the grape, 1900–1902: A study of grape pollen. By N. A. Booth. Dec., 1902.
225*. Control of rusty spot in cheese factories. By H. A. Harding and G. A. Smith. Dec., 1902.
226*. Raspberry cane blight and raspberry yellows. By F. C. Stewart and H. J. Eustace. Dec., 1902.
227*. A destructive apple rot following scab. By H. J. Eustace. Dec., 1902.
228*. San José scale investigations, IV. By V. H. Lowe and P. J. Parrott. Dec., 1902.
229. Director's report for 1902. By W. H. Jordan. Dec., 1902.
230. Some facts about commercial fertilizers in New York State. By L. L. Van Slyke. Feb., 1903.
231*. The relation of carbon dioxide to proteolysis in the ripening of Cheddar cheese. By L. L. Van Slyke and E. B. Hart. Feb., 1903.
232*. Combating the black rot of cabbage by the removal of affected leaves. By F. C. Stewart and H. A. Harding. Apr., 1903.
233*. Rennet-enzyme as a factor in cheese ripening. By L. L. Van Slyke, H. A. Harding, and E. B. Hart. June, 1903.

234*. Experiments in curing cheese at different temperatures. By L. L. Van Slyke, G. A. Smith, and E. B. Hart. July, 1903.
235*. Two decays of stored apples. By H. J. Eustace. July, 1903.
236*. Conditions affecting chemical changes in cheese ripening. By L. L. Van Slyke and E. B. Hart. July, 1903.
237*. The rôle of the lactic-acid bacteria in the manufacture and in the early stages of ripening of Cheddar cheese. By H. A. Harding. July, 1903.
238. The status of phosphorus in certain food materials and animal by-products, with special reference to inorganic forms. By E. B. Hart, W. H. Andrews [and W. H. Jordan]. Aug., 1903.
239*. Thinning apples. By S. A. Beach. Sept., 1903.
240. Inspection of feeding stuffs. By W. H. Jordan and F. D. Fuller. Sept., 1903.
241*. Potato spraying experiments in 1903. By F. C. Stewart, H. J. Eustace, and F. A. Sirrine. Dec., 1903.
242*. The importance of mineral matter and the value of grit for chicks. By W. P. Wheeler. Dec., 1903.
243. Spray mixtures and spray machinery. By S. A. Beach, V. A. Clark, and O. M. Taylor. Dec., 1903.
244. Director's report for 1903. By W. H. Jordan. Dec., 1903.
245*. Chemical changes in the souring of milk and their relations to cottage cheese. By L. L. Van Slyke and E. B. Hart. Feb., 1904.
246*. An experiment in shading strawberries. By O. M. Taylor and V. A. Clark. Feb., 1904.
247*. The lime-sulphur-soda wash for orchard treatment. By P. J. Parrott, S. A. Beach, and H. O. Woodworth. Feb., 1904.
248*. New York apples in storage. By S. A. Beach and V. A. Clark. Mar., 1904.
249*. A swelling of canned peas accompanied by a malodorous decomposition. By H. A. Harding and J. F. Nicholson. Mar., 1904.
250. The nature of the principal phosphorus compound in wheat bran. By A. J. Patten and E. B. Hart. Mar., 1904.
251. Vitality of the cabbage black rot germ on cabbage seed. By H. A. Harding, F. C. Stewart, and M. J. Prucha. Oct., 1904.
252. Report of analyses of commercial fertilizers for the spring and fall of 1903. By W. H. Jordan, L. L. Van Slyke, and W. H. Andrews. May, 1904.
253. Report of analyses of commercial fertilizers for the spring of 1904. By W. H. Jordan, L. L. Van Slyke, and W. H. Andrews. Aug., 1904.
254*. Fall spraying with sulphur washes. By P. J. Parrott and F. A. Sirrine. Aug., 1904.
255. Inspection of feeding stuffs. By W. H. Jordan and F. D. Fuller. Sept., 1904.
256. Seed selection according to specific gravity. By V. A. Clark. Oct., 1904.
257*. The composition of commercial soaps in relation to spraying. By L. L. Van Slyke and F. A. Urner. Dec., 1904.
258*. A study of the chemistry of home-made cider vinegar. By L. L. Van Slyke. Dec., 1904.
259*. The proportion of animal food in the ration for ducklings. By W. P. Wheeler. Dec., 1904.
260. Director's report for 1904. Dec., 1904.
261. Some of the relations of casein and paracasein to bases and acids, and their application to Cheddar cheese. By L. L. Van Slyke and E. B. Hart. Jan., 1905.
262*. Sulphur washes for orchard treatment, II. By P. J. Parrott, S. A. Beach, and F. A. Sirrine. Jan., 1905.
263*. The proteids of butter in relation to mottled butter. By L. L. Van Slyke, and E. B. Hart. Mar., 1905.
264*. Potato spraying experiments in 1904. By F. C. Stewart, H. J. Eustace, and F. A. Sirrine. Mar., 1905.
265. Plant food constituents used by bearing fruit trees; tabulated analyses showing amounts of plant-food constituents in fruits, vegetables, etc. By L. L. Van Slyke, O. M. Taylor, and W. H. Andrews. Apr., 1905.
266. Report of analyses of samples of fertilizers collected by the commissioner of agriculture during the summer and fall of 1904. Apr., 1905.
267*. Effect of certain arsenites on potato foliage. By W. H. Jordan, F. C. Stewart, and H. J. Eustace. May, 1905.
268. Inspection of feeding stuffs. Sept., 1905.
269*. Winter injury to fruit trees. By H. J. Eustace. Oct., 1905.
270*. The quality of commercial cultures for legumes. By H. A. Harding and M. J. Prucha. Nov., 1905.
271*. The adaptability of concentrated by-products for poultry feeding. By W. P. Wheeler. Dec., 1905.
272. Report of analyses of samples of fertilizers collected by the commissioner of agriculture during 1905. Dec., 1905.
273*. Spraying for San José scale. By H. E. Hodgkiss, F. A. Sirrine, and E. L. Baker. Dec., 1905.
274. Director's report for 1905. By W. H. Jordan. Dec., 1905.
275. Apple districts of New York with varieties for each. By U. P. Hedrick, N. O. Booth, and O. M. Taylor. Apr., 1906.
276*. Varieties of strawberries and cultural directions. By O. M. Taylor. Apr., 1906.
277*. The Bang method of controlling tuberculosis, with an illustration of its application. By H. A. Harding, G. A. Smith, and V. A. Moore. Apr., 1906.
278*. Varieties of raspberries and blackberries, with cultural directions. By O. M. Taylor. May, 1906.
279*. Potato spraying experiments in 1906 [i. e. 1905]. By F. C. Stewart, H. J. Eustace, and F. A. Sirrine. May, 1906.
280. Inspection of feeding stuffs. Aug., 1906.
281*. Commercial miscible oils for treatment of the San José scale. By P. J. Parrott, H. E. Hodgkiss, and F. A. Sirrine. Dec., 1906.
282*. Quality of commercial cultures for legumes in 1906. By M. J. Prucha and H. A. Harding. Dec., 1906.
283*. The apple and pear mites. By P. J. Parrott, H. E. Hodgkiss, and W. J. Schoene. Dec., 1906.
284. Director's report for 1906. Dec., 1906.
285. Report of analyses of samples of fertilizers collected by the commissioner of agriculture during 1906. Jan., 1907.
286*. The poplar and willow borer (*Cryptorhynchus lapathi* L.). By W. J. Schoene. Feb., 1907.
287*. Bordeaux injury. By U. P. Hedrick. Mar. 1907.
288*. Ringing herbaceous plants. By U. P. Hedrick, O. M. Taylor, and Richard Wellington. Apr., 1907.
289*. The effect of wood ashes and acid phosphate on the yield and color of apples. By U. P. Hedrick. Apr., 1907.
290*. Potato spraying experiments in 1906. By F. C. Stewart [and others]. June, 1907.
291. Inspection of feeding stuffs. Aug., 1907.
292*. Effect of treating milk with carbon dioxide gas under pressure. By L. L. Van Slyke and A. W. Bosworth. Aug., 1907.
293. Analyses of miscellaneous materials. By L. L. Van Slyke. Oct., 1907.
294. Report of analyses of samples of fertilizers collected by the commissioner of agriculture during 1907. Dec., 1907.
295. Director's report for 1907. By W. H. Jordan. Dec., 1907.

296*. Control of scale in all apple orchards. By P. J. Parrott, H. E. Hodgkiss, and W. J. Schoene. Jan., 1908.
297*. Investigations on some fruit diseases. By H. J. Eustace. Feb., 1908.
298. Distribution of station strawberries and raspberries. By U. P. Hedrick and O. M. Taylor. Mar., 1908.
299*. The relation of weather to the setting of fruit; with blooming data for 866 varieties of fruit. By U. P. Hedrick. Mar., 1908.
300*. Inoculation as a factor in growing alfalfa. By H. A. Harding and J. K. Wilson. Mar., 1908.
301*. Screening for the protection of cabbage seed beds. By W. J. Schoene. Mar., 1908.
302*. Dipping of nursery stock in the lime-sulphur wash. By P. J. Parrott, H. E. Hodgkiss, and W. J. Schoene. Apr. 1908.
303. Inspection of feeding stuffs. July, 1907 [i. e. 1908].
304. Report of analyses of samples of fertilizers collected by the commissioner of agriculture during 1908. Nov., 1908.
305*. Troubles of alfalfa in New York. By F. C. Stewart, G. T. French and J. K. Wilson. Nov., 1908.
306*. Control of leaf blister mite in apple orchards. By P. J. Parrott. Dec., 1908.
307*. Potato spraying experiments in 1907. By F. C. Stewart, G. T. French, and F. A. Sirrine. Dec., 1908.
308*. Methods of paying for milk at cheese factories. By L. L. Van Slyke. Dec., 1908.
309*. Variety test of strawberries and cultural directions. By O. M. Taylor. Dec., 1908.
310. Director's report for 1908. By W. H. Jordan. Dec., 1908.
311*. Potato spraying experiments in 1908. By F. C. Stewart, G. T. French, and F. A. Sirrine. Jan., 1909.
312*. The tussock moth in orchards. By W. J. Schoene. Jan., 1909.
313*. Inoculation and lime as factors in growing alfalfa. By H. A. Harding and J. K. Wilson. Feb., 1909.
314*. A comparison of tillage and sod mulch in an apple orchard. By U. P. Hedrick. Mar., 1909.
315. The grape districts of New York and table of varieties. By M. J. Dorsey. Mar., 1909.
316. Inspection of feeding stuffs. Aug., 1909.
317*. Milking machines: [I] Effect of method of handling on germ content of the milk. By H. A. Harding, J. K. Wilson, and G. A. Smith. Sept., 1909.
318. Report of analyses of samples of fertilizers collected by the commissioner of agriculture during 1909. [By E. L. Baker and others.] Nov., 1909.
319*. A chemical study of the lime-sulphur wash. By L. L. Van Slyke, C. C. Hedges, and A. W. Bosworth. Dec., 1909.
320*. Concentrated lime-sulfur mixtures. By P. J. Parrott. Dec., 1909.
321. Director's report for 1909. By W. H. Jordan. Dec., 1909.
322*. The individual animal as the unit in profitable dairying. By G. A. Smith. Mar., 1910.
323*. Potato spraying experiments in 1909. By F. C. Stewart, G. T. French, S. M. McMurran, and F. A. Sirrine. May, 1910.
324. Inspection of feeding stuffs. By E. L. Baker [and others]. July, 1910.
325. Report of analyses of samples of commercial fertilizers collected by the commissioner of agriculture during 1910. By E. L. Baker [and others]. Sept., 1910.
326*. The modern milk pail. By H. A. Harding, J. K. Wilson and G. A. Smith. Dec., 1910.
327*. Potato fertilizers: Method of application and form of nitrogen. By W. H. Jordan and F. A. Sirrine. Dec., 1910.
328*. Notes on New York plant diseases, I. By F. C. Stewart. Dec., 1910.
329*. Chemical investigation of best conditions for making the lime-sulphur wash. By L. L. Van Slyke, A. W. Bosworth, and C. C. Hedges. Dec., 1910.
330*. Experiments with homemade concentrated lime-sulphur mixtures. By P. J. Parrott and W. J. Schoene. Dec., 1910.
331*. Preliminary report on grape insects. By F. Z. Hartzell. Dec., 1910.
332. Director's report for 1910. By W. H. Jordan. Dec., 1910.
333*. Seed tests made at the station during 1910. By G. T. French. Feb., 1911.
334*. Observations on screening cabbage seed beds. By W. J. Schoene. Feb., 1911.
335*. Spraying to eradicate dandelions from lawns. By G. T. French. Mar., 1911.
336*. Newer varieties of strawberries, and cultural directions. By O. M. Taylor. Apr., 1911.
337*. Publicity and payment based on quality as factors in improving a city milk supply. By H. A. Harding. Apr., 1911.
338*. Potato spraying experiments in 1910. By F. C. Stewart, G. T. French, and F. A. Sirrine. May, 1911.
339*. Is it necessary to fertilize an apple orchard. By U. P. Hedrick. July, 1911.
340. Inspection of feeding stuffs. By E. L. Baker [and others]. Sept., 1911.
341. Report of analyses of samples of fertilizers collected by the commissioner of agriculture during 1911. By E. L. Baker [and others]. Nov., 1911.
342. Director's report for 1911. By W. H. Jordan. Dec., 1911.
343*. The pear thrips. By P. J. Parrott. Jan., 1912.
344*. The grape leaf-hopper and its control. By F. Z. Hartzell. Feb., 1912.
345*. Seed tests made at the station during 1911. By G. T. French. Feb., 1912.
346*. Influence of crossing in increasing the yield of the tomato. By Richard Wellington. Mar., 1912.
347*. A comparative test of lime-sulphur, lead benzoate, and Bordeaux mixture for spraying potatoes. By F. C. Stewart and G. T. French. Mar., 1912.
348. Analyses of materials sold as insecticides and fungicides. May, 1912.
349*. Potato spraying experiments, 1902–1911. By F. C. Stewart, G. T. French, and F. A. Sirrine. June, 1912.
350*. An experiment in breeding apples. By U. P. Hedrick and Richard Wellington. June, 1912.
351. Inspection of feeding stuffs. By E. L. Baker [and others]. Sept., 1912.
352*. Lime-sulphur versus Bordeaux mixture as a spray for potatoes, II. By M. T. Munn. Nov., 1912.
353*. Milking machines: [II], Effect of the machine method of milking upon the milk flow. By G. A. Smith and H. A. Harding. Nov., 1912.
354. Report of analyses of samples of fertilizers collected by the commissioner of agriculture during 1912. By E. L. Baker [and others]. Nov., 1912.
355*. Grape stocks or American grapes. By U. P. Hedrick. Dec., 1912.
356. Director's report for 1912. By W. H. Jordan. Dec., 1912.
357*. An experiment on the control of currant cane necrosis by summer pruning. By F. C. Stewart. Feb., 1913.
358*. Studies in plant nutrition: I, The unlike feeding capacity of different species of agricultural plants; the influence of fineness upon the availability of ground phosphatic rock; the fertilizing value of an iron ore waste. By W. H. Jordan. Feb., 1913.
359*. The grape leaf-hopper. By F. Z. Hartzell. Feb., 1913.
360*. Studies in plant nutrition: II, The necessary supply of plant food? By W. H. Jordan. Feb., 1913.
361*. Apples: Old and new. By U. P. Hedrick and G. H. Howe. Mar., 1913.
362*. Seed tests made at the station during 1912. By M. T. Munn. Feb., 1913.
363*. The financial stimulus in city milk production. By H. A. Harding and J. D. Brew. Apr., 1913.
364*. New or noteworthy fruits [I]. By U. P. Hedrick. July, 1913.

365*. The effect of certain dairy operations upon the germ content of milk. By H. A. Harding, G. L. Rueble, J. K. Wilson, and G. A. Smith. Aug., 1913.
366. Inspection of feeding stuffs. By E. L. Baker [and others]. Aug., 1913.
367*. The persistence of the potato late-blight fungus in the soil. By F. C. Stewart. Oct., 1913.
368*. The false tarnished plant-bug as a pear pest. By P. J. Parrott and H. E. Hodgkiss. Nov., 1913.
369 and 370*. 369, The injurious effect of formaldehyde gas on potato tubers. By F. C. Stewart and W. O. Glover.—370, The efficiency of formaldehyde in the treatment of seed potatoes for Rhizoctonia. By W. O. Glover. Dec., 1913.
371. Report of analyses of samples of fertilizers collected by the commissioner of agriculture during 1913. By E. L. Baker [and others]. Dec., 1913.
372. Director's report for 1913. By W. H. Jordan. Dec., 1913.
373*. A comparison of the microscopical method and the plate method of counting bacteria in milk. By J. D. Brew. Feb., 1914.
374*. Does *Cronartium ribicola* over-winter on the currant? By F. C. Stewart and W. H. Rankin. Feb., 1914.
375*. Tillage and sod mulch in the Hitchins orchard. By U. P. Hedrick. Mar., 1914.
376. Ten years' profits from an apple orchard. By U. P. Hedrick. Mar., 1914.
377. The cranberry toad-bug [*Phyfloscelis atra* Germ.]. By F. A. Sirrine and B. B. Fulton. Mar., 1914.
378*. Seed tests made at the station during 1913. By M. T. Munn. Mar., 1914.
379*. Potato spraying experiments at Rush in 1913. By F. C. Stewart. Mar., 1914.
380*. Cells in milk derived from the udder. By R. S. Breed. Mar., 1914.
381*. A test of commercial fertilizers for grapes. By U. P. Hedrick and F. E. Gladwin. Mar., 1914. See 458.
382*. The cabbage maggot in relation to the growing of early cabbage. By W. J. Schoene. Apr., 1914.
383*. A comparison of tillage and sod mulch in an apple orchard: Second report for Auchter orchard. By U. P. Hedrick. Apr., 1914.
384. Analyses of materials sold as insecticides and fungicides. Apr., 1914.
385. New or noteworthy fruits, II. By U. P. Hedrick. Apr., 1914.
386. Inspection of feeding stuffs. By E. L. Baker [and others]. May, 1914.
387*. Susceptibility to spraying mixtures of hibernating pear psylla adults and their eggs. By H. E. Hodgkiss. May, 1914.
388*. Tree crickets injurious to orchard and garden fruits. By P. J. Parrott and B. B. Fulton. May, 1914.
389*. Dead-arm disease of grapes. By Donald Reddick. July, 1914.
390. Report of analyses of samples of commercial fertilizers collected by the commissioner of agriculture during 1914. Oct., 1914.
391*. Ringing fruit trees. By G. H. Howe. Dec., 1914.
392*. Some facts about commercial fertilizers in New York State: Composition of fertilizers and cost of plant-food constituents; relation of guaranteed to actual composition in fertilizers; some defects in the present fertilizer law. By L. L. Van Slyke. Dec., 1914.
393. Director's report for 1914. By W. H. Jordan. Dec., 1914.
394*. Seed tests made at the station during 1914. By M. T. Munn. Jan., 1915.
395. Further studies on the spread and control of hop mildew. By F. M. Blodgett. Feb., 1915. See also New York Cornell Sta. Bul. 328.
396*. Effect of various dressings on pruning wounds of fruit trees. By G. H. Howe. Feb., 1915.
397*. Lime-sulphur versus Bordeaux mixture as a spray for potatoes, III. By M. T. Munn. Feb., 1915.
398*. Milk quality as determined by present dairy score cards. By J. D. Brew. Mar., 1915.
399*. The spindling-sprout disease of potatoes. By F. C. Stewart and F. A. Sirrine. Mar., 1915.
400*. Ground limestone for acid soils. By J. F. Barker and R. C. Collison. Mar., 1915.
401. Strawberry varieties. By O. M. Taylor. Mar., 1915. Also abridged edition.
402*. The status of spraying practices for the control of plant lice in apple orchards. By P. J. Parrott and H. E. Hodgkiss. Apr., 1915.
403. New or noteworthy fruits, III. By U. P. Hedrick. Apr., 1915.
404. Inspection of feeding stuffs. By A. W. Clark [and others]. Apr., 1915.
405. Potato-spraying experiments at Rush in 1914. By F. C. Stewart. May, 1915.
406*. Dwarf apples. By U. P. Hedrick. May, 1915.
407. The blooming season of hardy fruits. By U. P. Hedrick. May, 1915.
408. Ripening dates and length of season for hardy fruits. By U. P. Hedrick. June, 1915.
409*. Germ content of stable air and its effect upon the germ content of milk: Methods of bacterial analysis of air; stable air as a sourse of bacteria in milk. By G. L. A. Ruehle and W. L. Kulp. Aug., 1915.
410. Report of analyses of samples of commercial fertilizers collected by the commissioner of agriculture during 1915. Oct., 1915.
411*. The cherry and hawthorn sawfly leaf-miner [*Profenusa collaris* MacGillivray]. By P. J. Parrott and B. B. Fulton. Dec., 1915.
412*. The pasteurization of dairy by-products. By W. D. Dotterrer and R. S. Breed. Dec., 1915.
413. Director's report for 1915. By W. H. Jordan. Dec., 1915.
414. New or noteworthy fruits, IV. By U. P. Hendrick. Jan., 1916.
415*. Plant lice injurious to apple orchards: I, Studies on control of newly hatched aphides. By P. J. Parrott, H. E. Hodgkiss, and F. H. Lathrop. Feb., 1916.
416. Seed tests made at the station during 1915. By M. T. Munn. Mar., 1916. Also abridged edition.
417*. Some notes on the breeding of raspberries. By R. D. Anthony. Mar., 1916.
418*. Culture and forcing of Witloof chicory. By J. W. Wellington. Mar., 1916.
419*. The cabbage maggot: Its biology and control. By W. J. Schoene. Mar., 1916.
420. Inspection of feeding stuffs. By A. W. Clark. May, 1916.
421. Lime-sulphur versus Bordeaux mixture as a spray for potatoes, IV. By M. T. Munn. May, 1916. Also abridged edition.
422*. Observations on some degenerate strains of potatoes. By F. C. Stewart. July, 1916.
423*. Miscellaneous notes on injurious insects. By P. J. Parrott and H. E. Hodgkiss. Aug., 1916.
424*. Measurements of soil fertility. By W. H. Jordan. Aug., 1916.
425. Report of analyses of samples of commercial fertilizers collected by the commissioner of agriculture during 1916. Oct., 1916.
426. Cork, drouth spot, and related diseases of the apple. By A. J. Mix. Oct., 1916. Also abridged edition.
427. New or noteworthy fruits, V. By U. P. Hedrick. Dec., 1916.
428. Director's report for 1916. By W. H. Jordan. Dec., 1916.
429*. Goat's milk for infant feeding. By W. H. Jordan and G. A. Smith.—Practical study of goat's milk in infant feeding as compared to cow's milk. By D. H. Sherman and H. R. Lohnes. Feb., 1917.
430. Ground limestone for use in New York State. By J. F. Baer. Mar., 1917.
431. Plant lice injurious to apple orchards, II: Studies on control of newly hatched aphides. By P. J. Parrott, H. E. Hodgkiss, and F. H. Lathrop. Mar., 1917.
432*. Vinifera grapes in New York. By R. D. Anthony. Apr., 1917.

433*. Winter injury of grapes. By F. E. Gladwin. Apr., 1917.
434. Inspection of feeding stuffs. By A. W. Clark. May, 1917.
435. Culture of the globe artichoke. By J. W. Wellington. May, 1917.
436*. Black heart and the aeration of potatoes in storage. By F. C. Stewart and A. J. Mix. June, 1917.
437*. Neck-rot disease of onions. By M. T. Munn. July, 1917.
438. What is meant by "quality" in milk. By R. S. Breed, H. A. Harding, W. A. Stocking, jr., and E. G. Hastings. Oct., 1917.
439*. The number of bacteria in milk. By J. D. Brew and W. D. Dotterrer. Nov. 1917.
440. Report of analyses of samples of commercial fertilizers collected by the commissioner of agriculture during 1917. Nov., 1917.
441. Inspection of feeding stuffs. Nov., 1917.
442*. The radish maggot. By P. J. Parrott and Hugh Glasgow. Nov., 1917.
443*. The control of bacteria in market milk by direct microscopic examination. By R. S. Breed and J. D. Brew. Dec., 1917.
444. The cherry leaf beetle. By F. Z. Hartzell. Dec., 1917.
445. Director's report for 1917. By W. H. Jordan. Dec., 1917.
446. Seed tests made at the station during 1916–17. By M. T. Munn. Jan., 1918.
447. Newer varieties of strawberries. By O. M. Taylor. Feb., 1918. Also abridged edition.
448. The velvet-stemmed Collybia: A wild winter mushroom. By F. C. Stewart. Feb., 1918.
449. A nonparasitic malady of the vine. By F. E. Gladwin. Mar., 1918.
450*. Milking machines: As a source of bacteria in milk; methods of maintaining in a bacteria-free condition. By G. L. A. Ruehle, R. S. Breed, and G. A. Smith. July, 1918.
451*. Leaf hoppers injurious to apple trees. By F. H. Lathrop. Sept., 1918.
452. Report of analyses of samples of commercial fertilizers collected by the commissioner of agriculture during 1918. Dec., 1918.
453. Experiments for the control of the grape root worm. By F. Z. Hartzell. Dec., 1918.
454. Analyses of insecticides and fungicides. Dec., 1918.
455. Inspection of feeding stuffs. Dec., 1918.
456. Questions concerning the control of a city milk supply answered. By R. S. Breed. Dec., 1918.
457. Director's report for 1918. By W. H. Jordan. Dec., 1918.
458. A test of commercial fertilizers for grapes. By F. E. Gladwin. Jan., 1919. Includes summary of Bul. 381.
459*. Missing hills in potato fields: Their effect upon the yield. By F. C. Stewart. Mar., 1919.
460. Twenty years of fertilizers in an apple orchard. By U. P. Hedrick and R. D. Anthony. May, 1919.
461. Control of green apple aphis in bearing orchards. By H. E. Hodgkiss. June, 1919.
462. Seed tests made at the station during 1918. By M. T. Munn. June, 1919.
463*. Notes on New York plant diseases, II. By F. C. Stewart. June, 1919.
464. A test of methods in pruning the Concord grape in the Chautauqua grape belt. By F. E. Gladwin. July, 1919.
465*. An experience in crop production [1896–1913]. By W. H. Jordan and G. W. Churchill. June, 1919.
466. Spraying lawns with iron sulfate to eradicate dandelions. By M. T. Munn. Sept., 1919. Also abridged edition.
467. Report of analyses of samples of commercial fertilizers collected by the commissioner of agriculture during 1919. Dec., 1919.
468*. Some studies relating to calcium metabolism. By W. P. Wheeler. Dec., 1919.
469. Inspection of feeding stuffs. Dec., 1919.
470. Director's report for 1919. By W. H. Jordan. Dec., 1919.
471. Some of the effects of the war upon fertilizers. By L. L. Van Slyke. Jan., 1920.
472*. Milking machines: The production of high-grade milk with milking machines under farm conditions. By J. W. Bright. Feb., 1920.
473*. Soil studies: The influence of fertilizers upon the productiveness of several types of soils; the influence of fertilizers and plant growth upon soil solubles. By W. H. Jordan. Mar., 1920.
474*. Experiments on the spacing of potato plants. By F. C. Stewart. Apr., 1920.
475. Insect injuries in relation to apple grading. By B. B. Fulton. May, 1920.
476. The New York seed law and seed testing. By M. T. Munn. June, 1920. Also abridged edition.
477*. A progress report of fertilizer experiments with fruits. By R. C. Collison. June, 1920.
478. Sources of agricultural liming materials. By R. C. Collison. June, 1920.
479*. Studies on the cost of producing grapes. By F. E. Gladwin. Sept., 1920.
480. Inspection of commercial fertilizers, 1920. Oct., 1920.
481. Inspection of insecticides and fungicides, 1920. Dec., 1920.
482. A study of the composition of official samples of feeding stuffs and mixtures collected in 1920. By L. L. Van Slyke. Dec., 1920.
483. Director's report for 1920. By W. H. Jordan. Dec., 1920.

TECHNICAL BULLETINS.

1. A study of the metabolism and physiological effects of certain phosphorus compounds with milch cows [I]. By W. H. Jordan, E. B. Hart, and A. J. Patten. Nov., 1906.
2. An outbreak of the European currant rust (*Cronartium ribicola* Dietr.). By F. C. Stewart. Dec., 1906.
3. The action of dilute acids upon casein when no soluble compounds are formed; the hydrolysis of the sodium salts of casein. By L. L. Van Slyke and D. D. Van Slyke. Dec., 1906.
4. Some of the first chemical changes in cheddar cheese; the acidity of the water-extract of cheddar cheese. By L. L. Van Slyke and A. W. Bosworth. Apr., 1907.
5. Chemical studies of camembert cheese. By A. W. Bosworth. June, 1907.
6. Chloroform as an aid in the study of milk enzyms. By H. A. Harding and L. L. Van Slyke. Dec., 1907.
7. The Sporotrichum bud-rot of carnations and the silver top of June grass. By F. C. Stewart and H. E. Hodgkiss. Oct., 1908.
8. The bacterial flora of cheddar cheese. By H. A. Harding and M. J. Prucha. Dec., 1908.
9. A Mycosphaerella wilt of melons. By J. G. Grossenbacher. Feb., 1909.
10. A volumetric method for the determination of casein in milk. By L. L. Van Slyke and A. W. Bosworth. Sept., 1909.
11. The bacterial soft rots of certain vegetables: The mutual relationships of the causal organisms. By H. A. Harding and W. J. Morse.—Pectinase, the cytolitic enzym produced by *Bacillus carotovorus* and certain other soft-rot organisms. By L. R. Jones. Nov., 1909.
12. Crown-rot, arsenical poisoning, and winter-injury. By J. G. Grossenbacher. Dec., 1909.
13. The constancy of certain physiological characters in the classification of bacteria. By H. A. Harding. June, 1910.
14. The fermentation of citric acid in milk. By A. W. Bosworth and M. J. Prucha. Nov., 1910.

15. Medullary spots: A contribution to the life history of some cambium miners. By J. G. Grossenbacher. Nov., 1910.
16. The acidity of gluten feeds. By W. H. Jordan. Dec., 1910.
17. The apple and pear Membracids. By H. E. Hodgkiss. Dec., 1910.
18. A contribution to the life history, parasitism, and biology of *Botryosphaeria ribis*. By J. G. Grossenbacher and B. M. Duggar. July, 1911.
19. Phytin and phosphoric acid esters of inosite, [I]. By R. J. Anderson. Apr., 1912.
20. A study of the metabolism and physiological effects of certain phosphorus compounds with milch cows, II. By A. R. Rose. May, 1912.
21. Phytin and pyrophosphoric acid esters of inosite, II. By R. J. Anderson. June, 1912.
22. The organic-phosphoric acid compound of wheat bran: Preliminary report. (Third paper on phytin.) By R. J. Anderson. Sept., 1912.
23. Crown-rot of fruit trees: Field studies. By J. G. Grossenbacher. Sept., 1912.
24. The apple and cherry ermine moths. By P. J. Parrott and W. J. Schoene. Nov., 1912.
25. The organic phosphoric acid of cottonseed meal. By R. J. Anderson. Dec., 1912.
26. Composition and properties of some casein and paracasein compounds and their relations to cheese By L. L. Van Slyke and A. W. Bosworth. Dec., 1912.
27. A study of the udder flora of cows. By H. A. Harding and J. K. Wilson. Mar., 1913.
28. Zinc arsenite as an insecticide. By W. J. Schoene. Mar., 1913.
29. An efficient electrical incubator. By H. J. Conn and H. A. Harding. Mar., 1913.
30. The influence of temperature and moisture in fumigation. By W. J. Schoene. July, 1913.
31. The action of rennin on casein. By A. W. Bosworth. Sept., 1913.
32. A contribution to the chemistry of phytin: The organic phosphoric acid of cottonseed meal; phytin in oats; phytin in corn; concerning the composition of barium phytate and phytic acid from commercial phytin and a study of the properties of phytic acid and its decomposition products. By R. J. Anderson. Jan., 1914.
33. Preparation, composition and properties of caseinates of magnesium. By L. L. Van Slyke and O. B. Winter. Feb., 1914.
34. Why sodium citrate prevents curdling of milk by rennin. By A. W. Bosworth and L. L. Van Slyke.—The use of sodium citrate for the determination of reverted phosphoric acid. By A. W. Bosworth. May, 1914.
35. Bacteria of frozen soil. By H. J. Conn. July, 1914.
36. Organic phosphoric acids of wheat bran: Concerning the organic phosphoric acid compound of wheat bran (ninth paper on phytin); concerning inosite monophosphate, a new organic phosphoric acid occuring in wheat bran (tenth paper on phytin). By R. J. Anderson. July, 1914.
37. Studies relating to the chemistry of milk and casein: The cause of acidity of fresh milk of cows and a method for determination of acidity. By L. L. Van Slyke and A. W. Bosworth.—The phosphorus content of casein. By A. W. Bosworth and L. L. Van Slyke.—The action of rennin on casein (second paper). By A. W. Bosworth. Dec., 1914.
38. Culture media for use in the plate method of counting soil bacteria. By H. J. Conn. Nov., 1914.
39. Condition of casein and salts in milk. By L. L. Van Slyke and A. W. Bosworth. Dec., 1914.
40. Concerning the organic phosphorus compound of wheat bran and the hydrolysis of phytin: Inosite triphosphoric acid in wheat bran (eleventh paper on phytin); hydrolysis of phytin by the enzyme phytase (twelfth paper on phytin); hydrolysis of the organic phosphorus compound of wheat bran by the enzyme phytase (thirteenth paper on phytin); phytin in wheat bran (fourteenth paper on phytin). By R. J. Anderson. Jan., 1915.
41. Fibrin. By A. W. Bosworth. Apr., 1915.
42. The tree crickets of New York: Life history and bionomics. By B. B. Fulton. May, 1915.
43. Human milk. By A. W. Bosworth. May, 1915.
44. *Ascochyta clematidina*, the cause of stem-rot and leaf-spot of clematis. By W. O. Gloyer. Aug., 1915.
45. Inheritance of certain characters of grapes. By U. P. Hedrick and R. D. Anthony. Aug., 1915.
46. The casein and salts of goat's milk. By A. W. Bosworth and L. L. Van Slyke. Dec., 1915.
47. Limestones of New York, with reference to their agricultural use. By R. C. Collison and J. F. Barker. Dec., 1915.
48. Chemical changes in the souring of milk. By L. L. Van Slyke and A. W. Bosworth. Jan., 1916.
49. Counting bacteria by means of the microscope. By R. S. Breed and J. D. Brew. Feb., 1916.
50. Tree crickets as carriers of *Leptosphaeria coniothyrium* (Fckl.) Sacc. and other fungi. By W. O. Gloyer and B. B. Fulton. Mar., 1916.
51. Are spore-forming bacteria of any significance in soil under normal conditions? By H. J. Conn. Mar., 1916.
52. A possible function of actinomycetes in soil. By H. J. Conn. Mar., 1916.
53. The number of colonies allowable on satisfactory agar plates. By R. S. Breed and W. D. Dotterer.—A comparison between agar and gelatin as media for the plate method of counting bacteria. By H. J. Conn and W. D. Dotterer. May, 1916.
54. Concerning the utilization of inosite in the animal organism: Concerning the effect of inosite upon the respiratory exchange in the dog. By R. J. Anderson. The effect of inosite upon the metabolism of man. By R. J. Anderson and A. W. Bosworth. May, 1916.
55. Concerning certain aromatic constituents of urine: A study of the non-phenolic volatile oils isolated from the urine of cows, goats, horses, and human beings. By R. J. Anderson. Aug., 1916.
56. The leaf-weevil (*Polydrusus impressifrons* Gyll.). By P. J. Parrott and Hugh Glasgow. Dec., 1916.
57. Soil flora studies: General introduction [to Techinal Bulletins 57, 58, 59, and 60]; the general characteristics of the microscopic flora of soil; methods best adapted to the study of the soil flora. By H. J. Conn. Jan., 1917.
58. Soil flora studies: III, Spore-forming bacteria in soil. By H. J. Conn. Mar., 1917.
59. Soil flora studies: IV, Nonspore-forming bacteria in soil. By H. J. Conn. Mar., 1917.
60. Soil flora studies: V, Actinomycetes in soil. By H. J. Conn. Mar., 1917.
61. Facilities for lysimeter and out-door pot culture work at the station. By J. F. Barker. Mar., 1917.
62. Determination of carbonates in limestone and other materials. By J. F. Barker. May, 1917.
63. Inheritance of sex in strawberries. By R. D. Anthony. Sept., 1917.
64. The microscopic study of bacteria and fungi in soil. By H. J. Conn. Jan., 1918.
65. Studies relating to milk: The preparation of pure casein; a method for making electrometric titrations of milk and other solutions containing proteins; free lactic acid in sour milk. By L. L. Van Slyke and J. C. Baker. Dec., 1918.
66. The rosy aphis in relation to abnormal apple structures. By P. J. Parrott, H. E. Hodgkiss, and F. Z. Hartzell. Jan., 1919.
67. Ammonification of manure in soil: What soil organisms take part in the ammonification of manure? By J. W. Bright.—Taxonomic study of two important soil ammonifiers. By H. J. Conn. Apr., 1919.
68. Comparison of methods for computing daily mean temperatures: Effect of discrepancies upon investigations of climatologists and biologists. By F. Z. Hartzell. June, 1919.

69. Carbonic acid and carbonates in cow's milk. By L. L. Van Slyke and J. C. Baker. June, 1919.
70. Conditions causing variation in the reaction of freshly-drawn milk. By L. L. Van Slyke and J. C. Baker. June, 1919.
71. A method for the preliminary detection of abnormal milks. By J. C. Baker and L. L. Van Slyke. June, 1919.
72. The determination of the keeping quality of milk. By J. C. Baker and L. L. Van Slyke. June, 1919.
73. The use of the nitrate-reduction test in characterizing bacteria. By H. J. Conn and R. S. Breed. June, 1919.
74. Relation between lactic acid production and bacterial growth in the souring of milk. By J. C. Baker, J. D. Brew and H. J. Conn. Dec., 1919.
75. The accuracy of bacterial counts from milk samples. By R. S. Breed and W. A. Stocking. Jan., 1920.
76. A sexual inheritance in the violet (*Viola odorata*). By R. D. Anthony. Mar., 1920.
77. The leafhopper as a potato pest. By P. J. Parrott and R. D. Olmstead. Mar., 1920.
78. The carbon dioxide content as a basis for distinguishing heated from unheated milk. By L. L. Van Slyke and R. F. Keeler. Mar., 1920.
79. Concerning inosite phosphoric acids: Synthesis of phytic acid; composition of inosite phosphoric acid of plants. By R. J. Anderson. May, 1920.
80. The reaction of milk in relation to the presence of blood cells and of specific bacterial infections of the udder. By J. C. Baker and R. S. Breed. July, 1920.

[HORTICULTURAL MONOGRAPHS.]

The apples of New York. Vol. I–II. By S. A. Beach, N. O. Booth, and O. M. Taylor. 1905.
The grapes of New York. By U. P. Hedrick [and others]. 1908.
The plums of New York. By U. P. Hedrick [and others]. 1911.
The cherries of New York. By U. P. Hedrick [and others]. 1915.
The peaches of New York. By U. P. Hedrick [and others]. 1917.
Sturtevant's notes on edible plants. Edited by U. P. Hedrick. 1919.

INDEXES.

Index to first twenty-five annual reports, 1882–1906. (In New York State Sta. Rpt., 1907, Pt. I, p. 355–456.)

NORTH CAROLINA.

North Carolina Agricultural Experiment Station, Raleigh.

BULLETINS.

The first numbered bulletin of this station is 57. The following chronological list of the more important earlier publications is compiled for the most part from several slightly different lists found in publications of the station. (See Bulletin 87).

Analyses and valuation of fertilizers. By A. R. Ledoux. May 7, 1877.
Directions for making vinegar. 1878.
Analysis and valuation of fertilizers. 1877 and 1878. By A. R. Ledoux. 1878.
Same. Republished. 1879.
Ville's formula for composting and others furnished by A. R. Ledoux. 1879.
The sugar beet in North Carolina. 1878.
Silica versus ammonia, results of a comparative soil-test of Popplein's silicated phosphate with Peruvian guano, Merryman's ammoniated dissolved bone, Chapell's ammoniated superphosphate, Pacific guano, etc. By A. R. Ledoux. Dec. 16, 1878.
Report of the director, Jan., 1879. (*In* Rept. Comr. Agr. N. C., 1877–78, p. 37–51.)
Analyses and valuations of fertilizers for 1879.
Formulae for composting, 1879.
Materials of homemade fertilizers. By C. W. Dabney. (*In* Monthly Bul. N. C. Dept. Agr. No. 2, Jan., 1880, p. 4.)
Report to the legislature, Jan., 1881.
Analyses of drinking waters. By C. W. Dabney. (*In* Monthly Bul. N. C. Dept. Agr., Jan., 1881.)
Value of active ingredients of fertilizers. By C. W. Dabney. (*In* Monthly Bul. N. C. Dept. Agr. No. 3, Feb., 1880, p. 4.)
Agricultural chemicals. By C. W. Dabney. (*In* Monthly Bul. N. C. Dept. Agr., No. 4, Mar., 1881, p. 2, 3.)
Adulterated chemicals; more about drinking waters; analysis of drinking waters. By C. W. Dabney. (*In* Monthly Bul. N. C. Dept. Agr., No. 6, May, 1881, p. 4.)
Analyses and valuations of commercial fertilizers and chemicals, season of 1881. By C. W. Dabney. 1881.
Analyses and valuations of fertilizers, Ed. 2, 1881.
Those adulterated chemicals. By C. W. Dabney. (*In* Monthly Bul. N. C. Dept. Agr., No. 7, July, 1881, p. 3, 4.)
Removal; trade in fertilizers; extension in cotton culture; cost of the ingredients of fertilizers. By C. W. Dabney. (*In* Monthly Bul. N. C. Dept. Agr., No. 10, Jan., 1882, p. 3.)
Home-made manures; does high manuring pay upon cotton? (*In* Monthly Bul. N. C. Dept. Agr., No. 11, Feb., 1882, p. 2, 3.)
Does cotton exhaust the soil?—Cottonseed [and its uses]. By C. W. Dabney. (*In* Monthly Bul. N. C. Dept. Agr., No. 12, Mar., 1882, p. 3, 4.)
Stable manure [saved and composted]; some more feeding stuffs. By C. W. Dabney. (*In* Monthly Bul. N. C. Dept. Agr., No. 13, Apr., 1882, p. 2–4.)
Analyses of fertilizers. 1882.
Analyses of fertilizers. Ed. 2. 1882.
Home-made manures again; [cotton]. By C. W. Dabney. (*In* Monthly Bul. N. C. Dept. Agr., No. 14, June, 1882, p. 2, 3.)
Report of work done for the State board of health, 1881. The treatment of cotton lands on scientific principles; the agricultural experiment station at the State fair. By C. W. Dabney. (*In* Monthly Bul. N. C. Dept. Agr., No. 15, Oct., 1882, p. 3, 4.)
Horn, leather and wool waste and fertilizers made from them. 1882.
Finely ground phosphates or "floats." 1882.
On kainit. 1882.
Rice and its products; food and fodder plants. By C. W. Dabney. (*In* Monthly Bul. N. C. Dept. Agr., May, 1883, p. 10–12.)
The soja-bean; waste products of tobacco factories. By C. W. Dabney. (*In* Monthly Bul. N. C. Dept. Agr., May, 1883, p. 12.)
Analyses and valuations of fertilizers to March 1st, 1883.

Analyses of fertilizers. (*In* Monthly Bul. N. C. Dept. Agr., May, 1883, p. 14–15.)
Analyses and valuations of fertilizers to May 1, 1883.
Cotton-seed products. By C. W. Dabney. (*In* Monthly Bul. N. C. Dept. Agr., June, 1883, p. 3–6.)
North Carolina resources for commercial fertilizers: Ammoniates; sources of potash. By C. W. Dabney. (*In* Monthly Bul. N. C. Dept. Agr., Dec. 1883, p. 3–6.)
North Carolina resources for commercial fertilizers: Phosphates. By C. W. Dabney. (*In* Monthly Bul. N. C. Dept. Agr., Jan., 1884, p. 8–10.)
The trade in fertilizers during 1883.
The fertilizer trade during 1883. By C. W. Dabney. (*In* Monthly Bul. N. C. Dept. Agr., Feb., 1884, p. 2–4.
Progress of the phosphate investigation. By C. W. Dabney. (*In* Monthly Bul. N. C. Dept. Agr., Mar., 1884, p. 4–7.)
Analyses and valuations of fertilizers made up to May 1, 1884. By C. W. Dabney. [1884?]
North Carolina phosphates; analyses and comparative valuations of fertilizers. By C. W. Dabney. (*In* Monthly Bul. N. C. Dept. Agr., Apr., 1884, p. 4–7.)
Phosphatic marls and other marls. By C. W. Dabney. (*In* Monthly Bul. N. C. Dept. Agr., May, 1884, p. 2–4.)
Chemicals yielding nitrogen chiefly. By C. W. Dabney. (*In* Monthly Bul. N. C. Dept. Agr., July, 1884, p. 5–7.)
North Carolina phosphates. By C. W. Dabney. 1884.
Analyses of fertilizers. By C. W. Dabney. Mar. 28, 1885.
Analyses of fertilizers for 1885.
Analyses of fertilizers, fall 1885.
Analyses of composts, etc., 1885.
Fall analyses of fertilizers. [1885.]
Injurious insects and diseases of stock. 1885
Special instructions for voluntary observers and displaymen. By W. O. Bailey. 1886.
What the valuations of fertilizers mean. 1885.
Formulas for composts. By H. B. Battle. Sept., 1887.
Home-made fertilizers and composts and the ingredients used in them. May, 1888.
57. Field experiments. By H. B. Battle. June, 1888.
58. Details of field experiments. By H. B. Battle.—Examination of North Carolina drinking waters. By R. G. Grissom.—Meteorological summary for June, 1888. By H. M. Baldwin.—Important announcement. By H. B. Battle. July, 1888.
59. Purity and vitality of seed, with tests of seed sold in North Carolina. By Gerald McCarthy.—Meteorological summary for July-August, 1888. By H. M. Baldwin. Aug.-Sept., 1888.
60. Lucerne, its value as a forage crop. By Gerald McCarthy.—Meteorological summary for September-October, 1888. Oct.-Nov., 1888.
61. Composts: Formulas, analyses, and value. By H. B. Battle. Dec., 1888.
61½. Fertilizer analyses, partial list; seed examination for planters. Feb., 1889.
62. Fertilizer analyses and the fertilizer control, season of 1889. By H. B. Battle. Feb., 1889.
62½. Fertilizer analyses and the fertilizer control, season of 1889, second edition. By H. B. Battle. Mar., 1889.
63. Tests of seeds, with special reference to the vitality of old seed. By Gerald McCarthy. Rust on wheat and cotton.—Laboratory notes: Does stable manure in drying lose any of its ammonia? By F. B. Dancy.—Additional analyses of commercial fertilizers.—Pamunkey marl phosphate. By H. B. Battle. June, 1889.
64. Practical stock feeding on scientific principles. By F. B. Dancy. July, 1889. See 90.
65. Cooperative field tests during 1888. By H. B. Battle. Aug.-Sept., 1889.
66. Stock feeding as practiced in North Carolina. By F. B. Dancy.—Indian corn. By Gerald McCarthy. Sept., 1889.
67. Seed tests. By Gerald McCarthy. Oct., 1889.
67a. Seed tests. By Gerald McCarthy. Oct., 1889.
68. Farm and dairy buildings. By J. R. Chamberlain. Nov., 1889.
68a. Meteorological summary for North Carolina, October, 1889. By H. B. Battle and C. F. von Herrmann. Nov., 1889.
68b. Meteorological summary for North Carolina, November, 1889. By H. B. Battle and C. F. von Herrmann. Dec., 1889.
68c. Meteorological summary for North Carolina, December, 1889. By H. B. Battle and C. F. von Herrmann. Jan., 1890.
69. Fertilizer analyses and the fertilizer control, season of 1890. Feb., 1890.
69a. Meteorological summary for North Carolina, January, 1890. By H. B. Battle and C. F. von Herrmann. Feb., 1890.
69b. Meteorological summary for North Carolina, February, 1890. By H. B. Battle and C. F. von Herrmann. Mar., 1890.
70. The weed pests of the farm; Japan clover, its value as a renovator of worn soils. By Gerald McCarthy. Apr., 1890.
70a. Meteorological summary for North Carolina, March and April, 1890. By H. B. Battle and C. F. von Herrmann. June, 1890.
71. Cooperative field tests during 1889. By H. B. Battle.—Hillside ditches. By J. R. Chamberlain. May, 1890.
72. The work of the horticultural division. By W. F. Massey.—The value of pea-vine manuring for wheat. By J. R. Chamberlain. June, 1890.
72a. Meteorological summary for North Carolina, May, 1890. By H. B. Battle and C. F. von Herrmann.—Tornadoes in North Carolina, 1826 to 1890. [By J. P. Finley and C. F. von Herrmann.] July, 1890.
72b. Meteorological summary for North Carolina, June, 1890. By H. B. Battle and C. F. von Herrmann. July, 1890.
72c. Meteorological summary for North Carolina, July and August, 1890. By H. B. Battle and C. F. von Herrmann. Sept., 1890.
73. The best agricultural grasses. By Gerald McCarthy. Oct., 1890.
73a. Meteorological summary for North Carolina, September, 1890. By H. B. Battle and C. F. von Herrmann. Oct., 1890.
73b. Meteorological summary for North Carolina, October and November, 1890. By H. B. Battle and C. F. von Herrmann.—Origin of cold waves. By C. F. von Herrmann. Dec., 1890.
74. Work of the horticultural division, 1890: Tests of garden vegetables; fruits; ornamental planting; the culture of figs. By W. F. Massey. Dec., 1890.
74a. Meteorological summary for North Carolina, December, 1890. By H. B. Battle and C. F. von Herrmann. Dec., 1890.

74b. Meteorological summary for North Carolina, January, 1891. By H. B. Battle and C. F. von Herrmann. Jan., 1891.
75. Fertilizer analyses and fertilizer control, season of 1891. Mar. 16, 1891.
75a. [Fertilizer analyses.]
75b. [Fertilizer analyses.]
75c. Meteorological summary for North Carolina, February and March, 1891. By H. B. Battle and C. F. von Herrmann. Apr., 1891.
76. Plant diseases and how to combat them. By Gerald McCarthy. Mar., 1891.
77. Value of pea-vine manuring for wheat. By J. R. Chamberlain. May, 1891.
77a. Diseases of the horse. By C. B. Michener [and others]. 1890.
77b. The injury of foliage by arsenites; a cheap arsenite; combination of arsenites with fungicides. By B. W. Kilgore. July, 1891.
78. Some injurious insects. By Gerald McCarthy. July, 1891.
78a. Meteorological summary for North Carolina, April and May, 1891. By H. B. Battle and C. F. von Herrmann. July, 1891.
79. Facts of farmers, a bulletin of information on scientific matters in plain language for unscientific readers. By W. F. Massey. July, 1890.
79a. Meteorological summary for North Carolina, June and July, 1891. By H. B. Battle and C. F. von Herrmann. Aug., 1891.
80. Silos and silage. By F. E. Emery. Oct., 1891.
80a. Entomological and botanical divisions. Synopsis of published work for popular distribution. By Gerald McCarthy. Oct., 1891.
80b. Meteorological summary for North Carolina, August, 1891. By H. B. Battle and C. F. von Herrmann. Sept., 1891.
80b. Illustrative exhibit at the Southern Exposition, Raleigh, N. C., October and November, 1891. Oct., 1891.
80c. The digestibility of cottonseed hulls; the digestibility of a ration of cottonseed hulls and cottonseed meal; comparison of composition and digestibility of wheat straw and cottonseed hulls; the fertilizing constituents recovered in manure in these experiments. By F. E. Emery and B. W. Kilgore. Oct., 1891.
80d. Meteorological summary for North Carolina, September, 1891. By H. B. Battle, C. F. von Herrmann, and Roscoe Nunn. Oct., 1891.
80e. Meteorological summary for North Carolina, October, 1891. By H. B. Battle, C. F. von Herrmann, and Roscoe Nunn. Nov., 1891.
81. Feeding cottonseed hulls and meal for the production of beef. By J. R. Chamberlain and F. E. Emery. Dec., 1891.
81a. Meteorological summary for North Carolina, November and December, 1891. By H. B. Battle, C. F. von Herrmann, and Roscoe Nunn. Dec., 1891.
82. Fertilizer analyses and fertilizer control, with all analyses made in spring and fall of 1891. By H. B. Battle. Jan., 1892.
82a. Fertilizer analyses for 1892: First biweekly edition. By H. B. Battle. Feb. 13, 1892.
82b. Fertilizer analyses for 1892: Second biweekly edition. By H. B. Battle. Feb. 27, 1892.
83. Growing celery in the South; cultivation of onions; notes on horticultural work during 1891. By W. F. Massey. Feb., 1892.
83a. Meteorological summary for North Carolina, January, 1892. By H. B. Battle, C. F. von Herrmann, and Roscoe Nunn. Feb., 1892.
83b. Fertilizer analyses for 1892: Third biweekly edition. By H. B. Battle. Mar. 12, 1892.
83c. Fertilizer analyses for 1892: Fourth biweekly edition. By H. B. Battle. Mar. 26, 1892.
83d. Meteorological summary for North Carolina, February, 1892. By H. B. Battle, C. F. von Herrmann, and Roscoe Nunn. Mar., 1892.
83e. Fertilizer analyses for 1892: Fifth biweekly edition. By H. B. Battle. Apr. 16, 1892.
84. Some enemies of truck and garden crops. By Gerald McCarthy. Apr., 1892.
85. The late crop of Irish potatoes in the South. By W. F. Massey. Apr., 1892.
85a. Meteorological summary for North Carolina, March, 1892. By H. B. Battle, C. F. von Herrmann, and Roscoe Nunn. Apr., 1892.
86. Tobacco curing by the leaf cure on wire and stalk processes. By H. B. Battle, T. L. Blalock, and F. B. Carpenter. May, 1892.
86a. Meteorological summary for North Carolina, April, 1892. By H. B. Battle, C. F. von Herrmann, and Roscoe Nunn. May, 1892.
86b. Fertilizer analyses for 1892: Sixth bi-weekly edition. By H. B. Battle. June 15, 1892.
86c. Meteorological summary for North Carolina, May, 1892. By H. B. Battle, C. F. von Herrmann, and Roscoe Nunn. June, 1892.
86d. Meteorological summary for North Carolina, June, 1892. By H. B. Battle, C. F. von Herrmann, and Roscoe Nunn. July, 1892.
87. All publications of the station from March, 1877, to September, 1892. By H. B. Battle. Sept., 1892.
87a. Meteorological summary for North Carolina, July, 1892. By H. B. Battle, C. F. von Herrmann, and Roscoe Nunn.—Summary of proceedings of American Association of State Weather Services, August, 1892. By R. E. Kerkam. Aug., 1892.
87b. Meteorological summary for North Carolina, August, 1892. By H. B. Battle, C. F. von Herrmann, and Roscoe Nunn. Sept., 1892.
87c. Meteorological summary for North Carolina, September, 1892. By H. B. Battle, C. F. von Herrmann, and Roscoe Nunn. Oct., 1892.
87d. Digestion experiments with pulled fodder, crimson clover hay, cowpea-vine hay, corn silage, soja-bean silage, and cottonseed—raw, roasted, hulls, and meal. By F. E. Emery and B. W. Kilgore. Nov., 1892.
87e. Meteorological summary for North Carolina, October, 1892; brief statement of rules for making local weather forecasts. By H. B. Battle, C. F. von Herrmann, and Roscoe Nunn. Nov., 1892.
87f. Meteorological summary for North Carolina, November, 1892. By H. B. Battle, C. F. von Hermann, and Roscoe Nunn. Dec., 1892.
88. Fertilizer analyses and the fertilizer control, with all analyses made in spring and fall of 1892. By H. B. Battle. Jan., 1893.
88a. Meteorological summary for North Carolina, December, 1892. By H. B. Battle, C. F. von Herrmann, and Roscoe Nunn. Jan., 1892 [i. e. 1893].
88b. Fertilizer analyses and the fertilizer control: First biweekly edition of 1893. By H. B. Battle. Feb., 1893.
88c. Fertilizer analyses and the fertilizer control: Second bi-weekly edition of 1893. By H. B. Battle. Mar., 1893.
88d. Meteorological summary for North Carolina, January, 1893. By H. B. Battle, C. F. von Herrmann, and Roscoe Nunn. Mar., 1893.
89. Cooperative field tests during 1891 and 1892. By F. E. Emery. Mar., 1893.

89a. Fertilizer analyses and the fertilizer control: Third bi-weekly edition of 1893. By H. B. Battle. Mar., 1893.
89b. Meteorological summary for North Carolina, February, 1893. By H. B. Battle, C. F. von Herrmann, and Roscoe Nunn. Apr., 1893.
89c. Fertilizer analyses and the fertilizer control: Fourth bi-weekly edition of 1893. By H. B. Battle. Apr. 1, 1893.
90. Practical stock feeding. By B. W. Kilgore. Apr., 1893. See 106.
90a. Results of chemical analyses of tobacco cured by the leaf-cure on wire and the stalk processes. By F. B. Carpenter. Apr., 1893.
90b. Chemical analyses of some native North Carolina grasses, forage plants, grains, seeds, and by-products. By B. W. Kilgore. Apr., 1893.
90c. Fertilizer analyses and the fertilizer control: Fifth biweekly edition of 1893. By H. B. Battle. Apr., 1893.
90d. Meteorological summary for North Carolina, March, 1893. By H. B. Battle, C. F. von Herrmann, and Roscoe Nunn.—Has the moon any influence on the weather? By C. A. Young. Apr., 1893.
91. Some experiments in wheat culture. By F. E. Emery. Apr., 1893.
91a. Meteorological summary for North Carolina, April, 1893. By H. B. Battle, C. F. von Herrmann, and Roscoe Nunn.—Thunderstorm observations in North Carolina, June 1 to August 31, 1893. By C. F. von Herrmann. Apr., 1893.
91b. Fertilizer analyses and the fertilizer control: Sixth bi-weekly edition of 1893. By H. B. Battle. June 19, 1893.
91c. Meteorological summary for North Carolina, May, 1893. By H. B. Battle, C. F. von Herrmann, and Roscoe Nunn.—The Oxford tornado of May 3, 1893. By C. F. von Herrmann. June, 1893.
91d. Investigations upon the phosphoric acid in crude fertilizer materials and upon methods of fertilizer analyses. By B. W. Kilgore and R. E. Noble. July, 1893.
91e. Meteorological summary for North Carolina, June, 1893. By H. B. Battle, C. F. von Herrmann, and Roscoe Nunn. July, 1893.
92. The culture of orchard and garden fruits, including: The propagation, planting, and culture of fruit trees and fruit-bearing plants, and the preservation and shipping of fruits. By W. F. Massey.—Insects and diseases affecting fruit trees, plants, and fruit, with remedies for their destruction. By Gerald McCarthy. Aug., 1893.
92a. Meteorological summary for North Carolina, July, 1893. By H. B. Battle, C. F. von Herrmann, and Roscoe Nunn. Aug., 1893.
92b. Meteorological summary for North Carolina, August, 1893. By H. B. Battle, C. F. von Herrmann, and Roscoe Nunn. Sept., 1893.
93. Feeding experiments. By F. E. Emery. Oct., 1893.
93a. Meteorological summary for North Carolina, September, 1893. By H. B. Battle, C. F. von Herrmann, and Roscoe Nunn. Oct. 1893.
93b. Meteorological summary for North Carolina, October, 1893. By H. B. Battle, C. F. von Herrmann, and Roscoe Nunn. Nov., 1893.
93c. Meteorological summary for North Carolina, November, 1893. By H. B. Battle, C. F. von Herrmann, and Roscoe Nunn—Circular inviting attention to the work of the State weather service. By H. B. Battle and C. F. von Herrmann. Dec., 1893.
93d. Meteorological summary for North Carolina, December, 1893. By H. B. Battle, C. F. von Herrmann, and Roscoe Nunn. Dec., 1893.
94. Horticultural tests and results with garden vegetables, fruits, and bulb culture. By W. F. Massey. Jan., 1894.
95. The fertilizer control during 1893. By H. B. Battle. Jan., 1894.
96. Miscellaneous agricultural topics contained in the press service bulletins [June to December, 1893]. Jan., 1894.
97. Digestion experiments. By F. E. Emery and B. W. Kilgore. Jan., 1894.
98. Some leguminous crops and their economic value including: Legumes as improvers of the soil. By Gerald McCarthy.—The cultivation of leguminous plants for forage. By F. E. Emery.—The fungous and insect enemies of legumines. By Gerald McCarthy.—[The forage plant garden, including full notes taken during growth]. By Gerald McCarthy and F. E. Emery. Mar., 1894. The last article, p. 157–170, is not included in all copies of this bulletin.
99. Thread worm of pork (*Trichina spiralis*). By F. P. Williamson. Apr., 1894.
100. Our common insects. By Gerald McCarthy. Mar., 1894.
101. The progress of the dairy industry in North Carolina. By H. B. Battle. Aug., 1894.
102. Encouragement to the dairy interests of North Carolina through the medium of the State fairs. By F. E. Emery. Aug., 1894.
103. Miscellaneous agricultural topics contained in the press service bulletins of January to June, 1894. Aug., 1894.
104. Why pull your corn fodder? By F. E. Emery. Aug., 1894.
105. The chestnut and its weevil. By Gerald McCarthy.—Nut culture for North Carolina. By W. A. Taylor. Sept., 1894.
106. Rational stock feeding. By F. E. Emery and B. W. Kilgore. Sept., 1894. Includes 90 in part. See also, 163.
107. Flowering bulbs in North Carolina, and their propagation for florists' use. By W. F. Massey. Sept., 1894.
108. Seed testing; its uses and methods. By Gerald McCarthy. Sept., 1894.
109. Feeding trials with animals. By F. E. Emery. Oct., 1894.
110. The marls and phosphates of North Carolina. By F. B. Carpenter. Nov., 1894.
111. Fertilizer analyses of the fertilizer control, including official analyses of spring and fall samples of 1894. By H. B. Battle. Jan., 1895.
112. Trucking in the South, especially adapted to the needs of the North Carolina cultivators. By W. F. Massey.—[Appendix: The mixing of fertilizers for trucking crops. By H. B. Battle.] Jan., 1895.
113. The testing of milk. By F. E. Emery. June, 1895.
114. Tests of dairy implements and practices. By F. E. Emery. June, 1895.
115. Miscellaneous agricultural topics: [Press service bulletins July, 1894–Feb., 1895.] June, 1895.
116. Milk records and tests. By F. E. Emery. June, 1895.
117. Tuberculosis and its prevention. By F. P. Williamson. June, 1895.
118. Cottonseed hulls and meal for beef production. By F. E. Emery and B. W. Kilgore. July, 1895.
119. Volumetric estimation of phosphoric acid. By B. W. Kilgore and C. B. Williams. Aug., 1895.
120. Cultivation of the peach tree, including: The peach tree and its parasites. By Gerald McCarthy.—The planting, pruning, and cultivation of the peach. By W. F. Massey. Sept., 1895.
121. Hillside terraces or ditches. By F. E. Emery. Oct., 1895.
122. Types of tobacco and their analyses. By F. B. Carpenter. Nov., 1895.
123. Miscellaneous agricultural topics: [Press service bulletins August to November, 1895]. Dec., 1895.

124. Fertilizer analyses of the fertilizer control including official analyses of spring and fall samples of 1895. By H. B. Battle. Jan., 1896.
125. Forage grasses and hay making: Tests of forage grasses; the formation and care of grass lands; haying tools and haymaking. By Gerald McCarthy and F. E. Emery. May, 1896.
126. Why not improve your poultry? By F. E. Hege. Mar., 1896.
127. Parasites of domestic animals. By Gerald McCarthy. May, 1896.
128. Pests of grain crops. By Gerald McCarthy. July, 1896.
129. Horticultural experiments at Southern Pines, 1895. July, 1896.
130. Poultry keeping for profit. By F. E. Hege. Sept., 1896.
131. Parasites of poultry. By Gerald McCarthy. Sept., 1896.
132. The home vegetable garden. By W. F. Massey.—Pests of vegetable crops and their treatment. By Gerald McCarthy. Oct., 1896.
133. Some new forage, fiber, and other useful plants. By Gerald McCarthy. Dec., 1896.
134. Not published.
135. Not published.
136. Fertilizer analyses of the fertilizer control, including official analyses of spring and fall samples of 1896. By H. B. Battle. Jan., 1897.
137. A warning in regard to compost peddlers. By H. B. Battle. Jan., 1897.
138. The San José scale in North Carolina. By Gerald McCarthy. Jan., 1897.
139. Home-mixed fertilizers and composts. By H. B. Battle. Feb., 1897.
140. Volumetric estimation of phosphoric acid. By B. W. Kilgore. May, 1897.
141. A new tobacco pest. By Gerald McCarthy. July, 1897.
142. Comfortable, low-cost barns. By F. E. Emery. Aug., 1897.
143. Feeding experiments, milk records, etc. By F. E. Emery. Sept., 1897.
144. Ornithology of North Carolina. By J. W. P. Smithwick. Oct., 1897.
145. Crimson clover. By F. E. Emery. Dec., 1897.
146. Miscellaneous farm bulletin: Variety test of cow peas; germination test of wheat; a variety test of cotton; some experiments with potatoes. By F. E. Emery. Dec., 1897.
147. A study of lettuces. By W. F. Massey. June, 1898.
148. Digestion experiments: Timothy hay, timothy hay with cottonseed meal, crab grass hay. By F. E. Emery and B. W. Kilgore.—Pasteurization of milk. By F. E. Emery. June, 1898.
149. The apple in North Carolina. By W. F. Massey. June, 1898.
150. Medicinal plants which have been collected and used in North Carolina. By G. W. Hyams. June, 1898.
151. The fertilizer control for 1897. By W. A. Withers. June, 1898.
152. Poultry notes: Disease experiments; a feeding experiment with Pekin ducks; incubator records. By F. E. Hege. Sept., 1898.
153. Vinegar adulteration and the extent to which it exists in the samples for sale in North Carolina. By W. A. Withers and J. A. Bizzell. Dec., 1898.
154. The adulteration of coffee and tea offered for sale in North Carolina. By W. A. Withers and G. S. Fraps. Dec., 1898.
155. Baking powders on sale in North Carolina. By W. A. Withers and J. A. Bizzell. Dec., 1898.
156. The adulteration of flour as it is found to exist in samples purchased upon the markets in North Carolina. By W. A. Withers and G. S. Fraps. Dec., 1898.
157. Mineraline, the adulterant proposed for wheat flour, together with a report of some miscellaneous examinations for adulteration. By W. A. Withers and H. W. Primrose. Dec., 1898.
158. The fertilizer control for 1898. By A. W. Blair. Dec., 1898.
159. Horticultural experiments at Southern Pines, 1896. Dec., 1898.
160. Digestion experiments. By F. E. Emery. Jan., 1899.
161. Drinking water: City, town, and rural supplies. By A. W. Blair. Jan., 1899.
162. Farming in North Carolina. By W. F. Massey. Mar., 1899.
163. Rational stock feeding. By F. E. Emery and J. M. Johnson. May, 1899. A revision of Bul. 106.
164. The flora of North Carolina from Ranunculaceae to Salviniceae. By C. W. Hyams. May, 1899.
165. Preservatives in canned food offered for sale in North Carolina. By W. A. Withers and H. W. Primrose. June, 1899.
166. Butter: Its composition, artificial imitation, and adulterants; butter adulteration in North Carolina. By W. A. Withers and J. M. Pickel. June, 1899.
167. Poultry experiments during the year 1898–99. By F. E. Emery. June, 1899.
168. Experiments with field and forage crops. By F. E. Emery. June, 1899.
169. Feeding experiments and milk records. By F. E. Emery and J. M. Johnson. June, 1899.
170. Gardening under glass: An experiment in tomato forcing. By W. F. Massey and Alex Rhodes.—The use of glass in gardening for the market. By W. F. Massey. Mar., 1900.
171. Corn culture in North Carolina. By Benjamin Irby. May, 1900.
172. The digestibility of some non-nitrogenous constituents of certain feeding stuffs: the purification of phloroglucinol. By G. S. Fraps. May, 1900.
173. Another warning in regard to compost peddlers. By W. A. Withers. June, 1900.
174. Methods of determining proteid nitrogen in vegetable materials. By G. S. Fraps and J. A. Bizzell. June, 1900.
175. Some new species of the genus Crataegus and notes on some dichotomous Panicums. By W. W. Ashe. Aug., 1900.
176. The relative values of some nitrogenous fertilizers. By W. A. Withers and G. S. Fraps. Nov., 1900.
177. Edible mushrooms of North Carolina. By C. W. Hyams. Dec., 1900.
178. The nature of pentosoids and their determination. By G. S. Fraps. Mar., 1901.
179. The composition of cottonseed meal. By W. A. Withers and G. S. Fraps. Aug., 1901.
180. The sugar beet in North Carolina. By W. A. Withers. May, 1901.
181. Silk culture. By Gerald McCarthy. May, 1902.
182. The apple: Propagation, planting, pruning, and culture. By W. F. Massey.—Apples in North Carolina: preparing apples for market. By T. K. Bruner.—How to utilize the surplus apple crop: cider vinegar. By Gerald McCarthy. Mar., 1903.
183. Insects and fungus enemies of the apple, pear, and quince, with methods of treatment. By F. L. Stevens and Franklin Sherman, jr. Apr., 1903.
184. The culture and marketing of orchard and garden fruits. By W. F. Massey. Apr., 1903.
185. The black rot of the grape in North Carolina and its treatment. By A. W. Edson. Apr., 1903.
186. Insect and fungous enemies of the peach, plum, cherry, fig, and persimmon. By Franklin Sherman, jr., and F. L. Stevens. July, 1903.
187. Grapes and small fruits. By W. F. Massey. Sept., 1903.
188. The Granville tobacco wilt, a preliminary bulletin. By F. L. Stevens and W. G. Sackett. Sept., 1903.
189. Feeding farm horses and mules. By C. W. Burkett. Dec., 1903.
190. The formation of nitrates in the soil. By W. A. Withers. May, 1905.

191. Egg preservation. By J. S. Jeffrey. June, 1905.
192. Farm dairying. By J. C. Kendall. May, 1905.
193. Spraying mixtures and machinery; when and how to spray. By F. L. Stevens and R. S. Woglum. Feb., 1906. With supplement.
194. Mulberries. By H. H. Hume and F. C. Reimer. June, 1906.
195. Farm poultry. June, 1907.
196. Some apple diseases. By F. L. Stevens and J. G. Hall. June, 1907.
197. Some insect enemies of garden crops. By R. I. Smith. May, 1908.
198. Handling and marketing milk and cream. By John Michels. June, 1908.
199. Feeding experiments with cows and calves. By John Michels. June, 1908.
200. Feeding fermented cottonseed meal to hogs. By R. S. Curtis. Apr., 1909.
201. Scuppernong and other muscadine grapes: Origin and importance. By F. C. Reimer. Apr., 1909.
202. Manufacture and marketing of cottage cheese, skimmilk-buttermilk, and ice-cream. By John Michel. May, 1909. See 210.
203. Corn weevils and other grain insects. By R. I. Smith. May, 1909.
204. Some factors involved in successful corn growing. By C. B. Williams. June, 1909.
205. Insect enemies of cantaloupes, cucumbers, and related plants. By R. I. Smith. Jan., 1910.
206. Insects and fungus diseases of apple and pear. By R. I. Smith and F. L. Stevens. Mar., 1910.
207. Hog raising in North Carolina. By R. S. Curtis. Apr., 1910.
208. Fig culture in North Carolina. By F. C. Reimer. June, 1910.
209. Self-sterility of the scuppernong and other muscadine grapes. By F. C. Reimer and L. R. Detjen. Sept., 1910.
210. Improved methods for making cottage and Neufchatel cheese. By John Michels. Sept., 1910. A revision of part of 202.
211. Feeding and management of poultry for egg production. By J. S. Jeffrey. Sept., 1910.
212. Prevention of oat and wheat smut. By F. L. Stevens. Oct., 1910.
213. Feeding experiments with cows and calves. By John Michels. Oct., 1910.
214. Two important cantoloupe pests. By R. I. Smith. Mar., 1911.
215. Cottonseed meal feeding experiments with mules and horses. By R. S. Curtis. June, 1911.
216. Feeding cottonseed meal to draft animals. By R. S. Curtis. June, 1911.
217. A serious lettuce disease. Lettuce sclerotiniose. By F. L. Stevens. July, 1911.
218. Feeding experiments with beef cattle. By R. S. Curtis. July, 1911.
219. Feeding and management of beef cattle. By R. S. Curtis. Aug., 1911.
220. Care and management of the dairy herd. By J. C. McNutt. Aug., 1911.
221. Profitable poultry raising. By J. S. Jeffrey. Dec., 1911.
222. Cotton-seed meal and corn silage feeding experiments with beef cattle. By R. S. Curtis. June, 1912.
223. Sheep raising. By R. S. Curtis. June, 1912.
224. Top-working seedling pecan trees. By W. N. Hutt. Jan., 1914.
225. How shall farmers organize? By W. R. Camp. Feb., 1914.
226. Report of variety tests of cotton for 1913, and a summary of results for the past eleven years. By R. Y. Winters. Mar., 1914.
227. Fertilizer experiments with cotton on Piedmont Cecil sandy loam soil and varieties, culture and fertilization of cotton on Piedmont Cecil sandy loam and red clay soils, [1902–1909]. By C. B. Williams, B. W. Kilgore, and A. R. Russell. Apr., 1914.
228. Air-cooled apple storage houses. By W. N. Hutt. Aug., 1914.
229. Fertilizer experiments with corn on Piedmont Cecil sandy loam soil and varieties, culture and fertilization of corn on Piedmont Cecil sandy loam, red clay soils [1902–1909]. By C. B. Williams, B. W. Kilgore, and A. R. Russell. Feb., 1915.
230. Variety tests of corn for 1914. By G. M. Garren. Mar., 1915.
231. Report on variety tests of cotton for 1914. By R. Y. Winters. Apr., 1915.
232. Results of variety tests of wheat, oats, and rye. By G. M. Garren. July, 1915.
233. Common diseases of poultry. By B. F. Kaupp. Sept., 1915.
234. Farm drainage in North Carolina. By H. M. Lynde. Nov., 1915.
235. Some further studies of chick mortality; when to feed the baby chick. By B. F. Kaupp. Jan., 1916.
236. The prevention and control of erosion in North Carolina, with special reference to terracing. By F. R. Baker. Feb., 1916.
237. Tobacco culture in North Carolina. By E. H. Matthewson and E. G. Moss. Apr., 1917.
238. Harvesting tobacco by priming or picking the leaves as compared with cutting the stalks. By E. G. Moss. Aug., 1917.
239. The tobacco flea beetle. By Z. P. Metcalf and G. W. Underhill. Apr., 1919.
240. Composite versus one-day sampling of milk for the Babcock test. By W. H. Eaton. Jan., 1918.
241. Soybeans and cowpeas for North Carolina. By V. R. Herman. June, 1919.

SPECIAL BULLETINS.

1–15. See regular bulletins 77a, 80a, 80b, 82a, 82b, 83b, 83c, 83e, 86b, 88b, 88c, 89a, 89c, 90c, and 91b.
16–27. Contain only fertilizer control work, 1894–1895.
28. Agricultural suggestions to the Waldensians [living in Burke County, N. C.]. By W. F. Massey. May 4, 1895. In English and French.
29–47. Contain only fertilizer control work, 1895–1897.
[48]. The North Carolina agricultural experiment station. [For distribution at the] annual fair, State Agricultural Society, 1897. By W. A. Withers. 1897.
[49]. Sugar beets. By W. A. Withers. Mar., 1898.
50. The station and its exhibit: A special bulletin for distribution at the annual fair of the North Carolina Agricultural Society. By W. A. Withers. Oct., 1898.
51. Catalogue of herbarium specimens for exchange. By C. W. Hyams. Dec., 1898.
52. Cattle quarantine line. By Cooper Curtice. Jan., 1899.
53. Food adulteration in North Carolina. By W. A. Withers. Jan., 1899.

TECHNICAL BULLETINS.

1–7. See regular bulletins 67a, 77b, 80c, 87d, 90a, 90b, and 91d.
8. A serious lettuce disease (sclerotiniose) and a method of control. By F. L. Stevens, J. G. Hall, and G. W. Wilson. Sept., 1911.
9. Relation of the mineralogical and chemical composition to the fertilizer requirements of North Carolina soils. By J. K. Plummer. May, 1914.
10. Breeding rotundifolia grapes: A study of transmission of character. By F. C. Reimer and L. R. Detjen. May, 1914.
11. Self-sterility in dewberries and blackberries. By L. R. Detjen. Oct., 1916.
12. Inheritance of sex in *Vitis rotundifolia*: First report. By L. R. Detjen. Jan., 1917.

13. Biological investigation of *Sphenophorus callosus* Oliv. By Z. P. Metcalf. Jan., 1917.
14. Repair of bone in domestic fowl. By B. F. Kaupp. Oct., 1917.
15. A monograph on trembles or milk sickness and white snakeroot. By F. A. Wolf, R. S. Curtis, and B. F. Kaupp. July, 1918.
16. Clover stem rot. By F. A. Wolf and R. O. Cromwell. June, 1919.
17. The limits in hybridization of *Vitis rotundifolia* with related species and genera. By L. R. Detjen. July, 1919.
18. Some F$_1$ hybrids of *Vitis rotundifolia* with related species and genera. By L. R. Detjen. Aug., 1919.
19. Mineral content of southern poultry feeds and their potential acidity and potential alkalinity. By B. F. Kaupp. Dec., 1920.

NORTH DAKOTA.

North Dakota Agricultural Experiment Station, Agricultural College.

BULLETINS.

1. Grain smuts. By H. L. Bolley. Jan., 1891.
2. Small fruits. By C. B. Waldron. Apr., 1891.
3. Diseases of sheep. By T. D. Hinebauch. Oct., 1891. See 28.
4. Potato scab and possibilities of prevention; a disease of beets identical with "deep scab" of potatoes; hastening the maturity of potatoes. By H. L. Bolley. Dec., 1891.
5. Sugar beets. By E. F. Ladd. Feb., 1892.
6. The mustard family. By C. B. Waldron. June, 1892.
7. Rheumatism in horses. By T. D. Hinebauch. Sept., 1892.
8. Wheat growing and dairying for North Dakota. By E. F. Ladd and W. M. Whalen. Dec., 1892.
9. Conditions affecting the value of wheat for seed; prevention of potato scab. By H. L. Bolley. Mar., 1893.
10. Grain and forage crops. By W. M. Hays. May, 1893.
11. Grain and forage crops. By W. M. Hays. Nov., 1893.
12. Transplanting onions. By C. B. Waldron. Jan., 1894.
13. Rational selection of wheat for seed; typhoid fever. By H. L. Bolley. Apr., 1894.
14. Tuberculosis. [By T. D. Hinebauch.] June, 1894.
15. Chemical composition of foods. By E. F. Ladd. Sept., 1894.
16. Dairy herd record, 1894; pasture *v.* pasture and grain; dehorning. By J. H. Shepperd.—Butter making. By E. E. Kaufman. Dec., 1894.
17. The effect of seed exchange upon the culture of wheat; distribution of weed seeds by winter winds. By H. L. Bolley. Mar., 1895.
18. Some profitable vegetables for North Dakota. By C. B. Waldron. Mar., 1895.
19. Treatment of smut in wheat; treatment of potato scab. By H. L. Bolley. Apr., 1895.
20. Winter rations for horses; grain rations for work horses. By J. H. Shepperd. Sept., 1895.
21. Cleanliness in handling milk; bacteriological considerations. By H. L. Bolley. Dec., 1895.
22. The creamery industry. By E. E. Kaufman. Feb., 1896.
23. Grain and forage crops. By J. H. Shepperd. Mar., 1896.
24. North Dakota soils. By E. F. Ladd. June, 1896.
25. Tree culture. By C. B. Waldron. Sept., 1896.
26. Feeding of millet to horses. By T. D. Hinebauch. Nov., 1896.
27. New studies upon the smut of wheat, oats, and barley, with a résumé of treatment experiments for the last three years. By H. L. Bolley. Mar., 1897.
28. Grain rations for fattening sheep; value of straw in a ration, and the gains made after twelve weeks' feeding. By J. H. Shepperd.—"Diseases of sheep," a reprint of Bulletin 3. By T. D. Hinebauch. June, 1897.
29. A study of methods of cultivation. By J. H. Sheppard and J. A. Jeffrey. Sept., 1897.
30. Preliminary report upon the selection of potatoes for planting. By H. L. Bolley. Dec., 1897.
31. Experiment station notes on miscellaneous subjects. By J. H. Worst. Mar., 1898.
32. Chemical studies. By E. F. Ladd. Apr., 1898.
33. Fattening cattle. By J. H. Shepperd. Aug., 1898.
34. Some destructive insects. By C. B. Waldron. Dec., 1898.
35. Some chemical problems investigated. By E. F. Ladd. Jan., 1899. See 44.
36. A study of the root systems of wheat, oats, flax, corn, potatoes, and sugar beets, and of the soil in which they grew. By A. M. Ten Eyck. Jan., 1899.
37. The prevention of the smuts of cereal grains, and prevention of potato scab. By H. L. Bolley. Mar., 1899.
38. Cultivation experiment with wheat and a special study of the moisture and temperature of the soil under the Campbell and ordinary treatments. By J. H. Shepperd and A. M. Ten Eyck. Apr., 1899.
39. Crop report for 1898. By J. H. Shepperd and A. M. Ten Eyck. Apr., 1899.
40. Grass and forage crops. By J. H. Shepperd. Apr., 1899.
41. Some hints on ornamental planting. By C. B. Waldron.—[Locating shrubs for effect. By F. H. Nutter.] Sept., 1899.
42. Field notes of horticultural department. By C. B. Waldron. Dec., 1899.
43. A study of the root systems of cultivated plants grown as farm crops. By A. M. Ten Eyck. Mar., 1900.
44. Water-hemlock posioning; preserving eggs. By E. F. Ladd. June, 1900. Revised extracts from 35.
45. Feeding trials with work horses. By J. H. Shepperd. Sept., 1900.
46. A preliminary list of the Spermaphyta, seed-bearing plants of North Dakota. By H. L. Bolley and L. R. Waldron. Dec., 1900.
47. Humus and soil nitrogen; climatic studies with wheat, oats, and corn; brome and timothy compared; Austrian brome hay. By E. F. Ladd. Mar., 1901.
48. Wheat farming experiments and soil moisture studies. By J. H. Shepperd and A. M. Ten Eyck. June, 1901.
49. Some points on fruit culture. By C. B. Waldron. Sept., 1901.
50. Flax wilt and flax-sick soil. By H. L. Bolley. Dec., 1901.
51. Corn culture. By J. H. Shepperd and A. M. Ten Eyck. Mar., 1902.
52. The length of the growing season in North Dakota. By E. F. Ladd, J. H. Shepperd, and A. M. Ten Eyck. June, 1902.
53. Food products and their adulteration. By E. F. Ladd. Sept., 1902.
54. Abortion in cattle; scours in new-born calves. By Leunis Van Es. Dec., 1902.
55. Flax and flax-seed selection. By H. L. Bolley. Mar., 1903.

56. Noxious weeds and how to kill them. By L. R. Waldron. June, 1903.
57. Some food products and food adulteration. By E. F. Ladd. Sept., 1903.
58. Some stock-poisoning plants of North Dakota. By Leunis Van Es and L. R. Waldron. Dec., 1903.
59. Trees and fruit in North Dakota. By C. B. Waldron. Mar., 1904.
60. Analysis of formaldehyde sold in North Dakota. By E. F. Ladd. Apr., 1904.
61. Scabies in sheep and cattle and mange in horses. By Leunis Van Es. May, 1904.
62. Weed studies. By L. R. Waldron. Nov., 1904.
63. Adulterated food products and food studies. By E. F. Ladd. Nov., 1904.
64. Root systems of field crops. By J. H. Shepperd. Mar., 1905.
65. Experiments in clover growing; trials with alfalfa. By J. H. Shepperd. Apr., 1905.
66. Waters of North Dakota. By E. F. Ladd. Aug., 1905.
67. Paints and paint products. By E. F. Ladd and C. D. Holley. Dec., 1905.
68. Rust problems: Facts, observations, and theories; possible means of control. By H. L. Bolley. Feb., 1906.
69. Foods and food products; whisky and other beverages; drugs and medicines. By E. F. Ladd. June, 1906.
70. Paints and their compositions. By E. F. Ladd and C. D. Holley. June, 1906.
71. Flax culture. By H. L. Bolley. Oct., 1906.
72. Bleaching of flour. By E. F. Ladd and R. E. Stallings. Nov., 1906.
73. Fattening steers on barley and rejected wheat. By J. H. Shepperd and W. B. Richards. Dec., 1906.
74. Hints to homesteaders. By L. R. Waldron. Jan., 1907.
75. Cereal crop experiments. By J. H. Shepperd and O. O. Churchill. Feb., 1907.
76. Experiments with Indian corn, forage crops, leguminous crops. By J. H. Shepperd and O. O. Churchill. Mar., 1907.
77. Bovine tuberculosis. By Leunis Van Es. July, 1907.
78. Poultry experiments, care and management of the flock. By J. H. Shepperd and O. W. Dynes. Oct., 1907.
79. The distribution of pedigree seed. By J. H. Shepperd and O. O. Churchill. Feb., 1908.
80. Weeds and methods of eradication; weed control by means of chemical sprays. By H. L. Bolley. Mar., 1908.
81. Practical paint tests in 1907. By E. F. Ladd. Sept., 1908.
82. Milling and baking tests; tests of flour sold in North Dakota. By E. F. Ladd. Oct., 1908.
83. Pork production under North Dakota conditions. By W. B. Richards. Nov., 1908.
84. Fattening hogs. By J. H. Shepperd and W. B. Richards. June, 1909.
85. Glanders. By Leunis Van Es. Sept., 1909.
86. Some ready-mixed paints. By E. P. Ladd and G. A. Abbott. Dec., 1909.
87. Seed disinfection and crop production, methods and types of machinery needed. By H. L. Bolley. Jan., 1910.
88. Windbreaks and hedges. By C. B. Waldron. June, 1910.
89. Wheat investigations: Milling, baking and chemical tests. By E. F. Ladd and C. H. Bailey. Sept., 1910.
90. The potato and its culture. By J. H. Shepperd and O. O. Churchill. Jan., 1911.
91. Dairy herd records. By J. H. Shepperd and W. B. Richards. 1911.
92. Paints: Their service condition. By E. F. Ladd and E. E. Ware. June, 1911.
93. Wheat investigations: Milling, baking and chemical tests. By E. F. Ladd and C. H. Bailey. June, 1911.
94. Swamp fever in horses. By Leunis Van Es, E. D. Harris, and A. F. Schalk. Sept., 1911.
95. Alfalfa: I, Practical information for alfalfa growers; II, studies in drouth resistance and seed production. By L. R. Waldron. Dec., 1911.
96. Some principles of dry farming. By L. R. Waldron. Jan., 1912.
97. Barn plans. By R. M. Dolve. May, 1912.
98. The silo and its construction. By J. H. Shepperd, G. L. Martin, and R. M. Dolve. July, 1912.
99. The adjustment and repair of self-binders. By R. M. Dolve. July, 1912.
100. Cropping systems for wheat production. By J. H. Shepperd and R. C. Doneghue. Oct., 1912.
101. Potato warehouse plans. By R. M. Dolve. Nov., 1912.
102. Organizing cow-testing associations and cooperative creameries. By G. L. Martin. Nov., 1912.
103. Cropping to flax on new lands of semi-arid land areas. By H. L. Bolley and W. L. Wilson. Mar., 1913. Published also as Mont. Agr. Expt. Sta. Circ. 22.
104. Cost of producing farm crops. By W. R. Porter. Apr., 1913.
105. Windmill electric lighting and power. By Wallace Manikowske. Aug., 1913.
106. 1, The fertility constituents of flax. By J. W. Ince.—2, The feeding value of flax material. By J. W. Ince.—3, The distribution of prussic acid in the flax plant. By J. W. Ince.—4, Influence of bran extract on the baking quality of flours. By H. L. White.—5, Phosphorous content of wheat and flour and its relation to the baking qualities of flour. By H. L. White and R. F. Beard. Oct., 1913.
107. Wheat: Soil troubles and seed deterioration causes of soil sickness in wheat lands; possible methods of control; cropping methods with wheat. By H. L. Bolley. Dec., 1913.
108. Avian tuberculosis. By Leunis Van Es and A. F. Schalk. Apr., 1914.
109. Report of four years' work of the North Dakota Holstein cattle breeding circuit. By J. H. Shepperd and W. B. Richards. Dec., 1914.
110. Dry farming investigations in western North Dakota. By J. C. Thysell [and others]. Feb., 1915.
111. Tomatoes for North Dakota. By H. O. Werner. Mar., 1915.
112. Fertility and weeds. By J. W. Ince. May, 1915.
113. Report of progress in sugar beet trials for the season of 1914. By J. W. Ince. May, 1915.
114. Chemical and physical constants for wheat and mill products. By E. F. Ladd. Jan., 1916.
115. Sheep feeding trials at Williston substation. By W. H. Peters and C. H. Ruzicka. Feb., 1916.
116. The influence of energy material upon the relation of soil micro-organisms to soluble plant food. By C. J. T. Doryland. May, 1916.
117. Composition of the maize plant. By J. W. Ince. July, 1916.
118. Soya bean oil; flax studies. By W. F. Washburn. Sept., 1916.
119. North Dakota wheat for 1916. By E. F. Ladd. Nov., 1916.
120. The capacity of wheat and mill products for moisture. By W. L. Stockham. Jan., 1917.
121. Soil survey of Dickey County. By T. M. Bushnell [and others]. Jan., 1917.
122. The milling and baking data for the 1915 crop of wheat. By Thomas Sanderson. June, 1917.
123. Other grains than wheat in bread making. By W. L. Stockham.—Milling value of barley. By Thomas Sanderson. Oct., 1917.
124. Soil survey of Bottineau County. By R. C. Doneghue. Oct., 1917.
125. Notes on parasitic anaphylaxis and allergy. By Leunis Van Es and A. F. Schalk. Oct., 1917.

126. Crop rotation and soil fertility. By R. C. Doneghue. May, 1918.
127. Pork production in North Dakota. By W. H. Peters and D. J. Gelken. July, 1918.
128. New labor saving machinery for harvesting grain. By W. R. Porter. Apr., 1919.
129. Potato experiments 1917 and 1918. By H. O. Werner. May, 1919.
130. Report of the Hettinger substation for the years 1913–1918, inclusive. [By J. H. Shepperd and others.] May, 1919.
131. Report [7–11] of the Dickinson substation for the years 1914–1918, inclusive. [By J. H. Shepperd and others.] Oct., 1919.
132. Not published.
133. Not published.
134. Report of the Langdon substation, 1914 to 1919. By P. F. Trowbridge. Sept., 1920.
135. Thirteenth and fourteenth annual report of the State demonstration farms 1918 and 1919. By W. R. Porter. May, 1920.
136. Report of the director, July 1, 1917 to June 30, 1919. By P. E., Trowbridge. Mar., 1920.
137. The bread value of wheat. By Thomas Sanderson. May, 1920.
138. Twelfth annual report of the Dickinson substation, 1919. By Leroy Moomaw. July, 1920.
139. Some factors related to the quality of wheat and strength of flour. By W. L. Stockham. Sept., 1920.
140. Grass fat cattle warmed up on corn fodder with a straw shed as shelter. By J. H. Shepperd. Sept., 1920.
141. Fall plowing vs. spring plowing for North Dakota grain crops. By H. L. Walster. Sept., 1920.
142. The cost of producing wheat and other crops in North Dakota in 1919. By R. E. Willard. Sept., 1920.
143. Earliness and rustiness of spring wheats. By H. L. Walster. Dec., 1920.

PAINT BULLETINS.

1. Report on service condition of paints. By H. A. Gardner, George Butler, and Charles Macnichol. Feb., 1910.
2. Report on the service condition of paints. By John Theobald and R. L. Peters. Feb., 1910.
3. Report on the service condition of paints. By S. M. Evans, R. W. Evans, and L. S. Hughes. Feb., 1910.
4. Report on service condition of paints. By John Dewar. Apr., 1910.

Vol. I, No. 5. Analysis of mixed paints. Apr., 1911.
Vol. I, No. 6. Lessons from the 1906 test fence. By E. F. Ladd and W. F. Washburn.—The North Dakota paint law and its workings. By E. F. Ladd.—Analyses of commercial paints. By E. F. Ladd and W. F. Washburn.—Method for varnish anaysis. By R. W. Darner. Mar., 1915.
Vol. I, No. 7. A study of the fatty acids obtained from varnish oils and varnishes. By W. T. Pearce.—The wearing quality and physical tests of several exterior varnishes compared with their chemical analysis. By W. T. Pearce and E. V. Ladd.—Soya bean investigation. By Culver Ladd. Oct., 1919.

SPECIAL BULLETINS.

1. Rocky mountain locusts. By H. E. Stockbridge. July, 1891.
2. Weeds. By L. R. Waldron. May, 1903.

SPECIAL BULLETINS, FOOD DEPARTMENT.

Individual numbers of this series often have no distinctive title, but are made up of items relating to food and drug inspection. Reports of work of more than routine interest are brought out in the following list.

1. Pure food law and rulings of the food commissioner. By E. F. Ladd. Apr., 1902.
2. A warning regarding the use of chemical preservatives in meats. By E. F. Ladd. Mar., 1905.
3. Pure food, pure drug, formaldehyde, Paris green and paint laws. By E. F. Ladd. Apr., 1905.
4. Pure food law amended and reenacted; pure drug law; paint law; rulings and discussions. By E. F. Ladd. Apr., 1906.
5. Agricultural laws. By E. F. Ladd. Apr., 1907.
6. Food and drug laws. By E. F. Ladd. Apr., 1907. Revised reprint, May, 1915.
7. Labels and rulings. By E. F. Ladd. Nov., 1907.
8. Labels and rulings. By E. F. Ladd. Oct., 1908.
9. Chemically treated flours. By E. F. Ladd. Dec., 1908.
10. Model food law bill. By E. F. Ladd. Dec., 1908.
11. Pure beverage law; sanitary inspection law; rulings and discussions. By E. F. Ladd. May, 1909. Revised reprint, Dec., 1911.

Vol. I, No. 12. [Miscellaneous items.] June, 1909.
Vol. I, No. 13. [Miscellaneous items.] July, 1909.
Vol. I, No. 14. The food preservative controversy. [By E. F. Ladd.] Aug., 1909.
Vol. I, No. 15. [Miscellaneous items.] Sept., 1909.
Vol. I, No. 16. [Miscellaneous items.] Nov., 1909.
Vol. I, No. 17. The model food law bill. By E. F. Ladd. Nov., 1909.
Vol. I, No. 18. [Miscellaneous items.] Nov., 1909.
Vol. I, No. 19. Durum wheat flour. Nov., 1909.
Vol. I, No. 20. [Miscellaneous items.] Jan., 1910.
Vol. I, No. 21. [Miscellaneous items.] Mar., 1910.
Vol. I, No. 22. [Miscellaneous items.] Apr., 1910.
Vol. I, No. 23. [Miscellaneous items.] May, 1910.
Vol. I, No. 24. [Miscellaneous items including:] Blending of durum with hard spring wheat flour. By L. M. Thomas. June, 1910.
Vol. I, No. 25. [Miscellaneous items including:] Velvet chaff vs. hard spring wheats. Aug., 1910.
Vol. I No. 26. [Miscellaneous items including:] Bread wrapping. By L. W. Thomas.—Acidity of wrapped bread. By H. L. White.—Milling [and banking] test of hard red spring versus velvet chaff wheat. By Thomas Sanderson [and C. H. Bailey]. Sept., 1910.
Vol. I, No. 27. [Miscellaneous items.] Nov., 1910.
Vol. I, No. 28. [Miscellaneous items including:] Quantitative determination of water in pastes, semi-pastes, and mixed paints. By L. P. Nemzek. Dec., 1910.
Vol. I, No. 29. [Miscellaneous items.] Jan., 1911.
Vol. I, No. 30. [Miscellaneous items.] Feb., 1911.
Vol. I, No. 31. [Miscellaneous items including:] An address on meat inspection. By Leunis Van Es. Mar., 1911.
Vol. I, No. 32. [Miscellaneous items.] Apr., 1911.
Vol. I, No. 33. [Miscellaneous items.] May, 1911.
Vol. I, No. 34. [Miscellaneous items.] June, 1911.

Vol. I, No. 35. [Miscellaneous items including:] Experiments upon flax screenings. By J. W. Ince. Aug., 1911.
Vol. I, No. 36. [Miscellaneous items including:] Tempering of durum wheat; winter wheat versus spring wheat. By Thomas Sanderson. Sept., 1911.
Vol. I, No. 37. [Miscellaneous items.] Oct., 1911.
Vol. I, No. 38. [Miscellaneous items including:] Moisture content of wheat. [By Thomas Sanderson.]—The milling of spelts for bread making. Nov., 1911.
Vol. I, No. 39. [Miscellaneous items.] Dec., 1911.
Vol. II, No. 1. [Miscellaneous items including:] The protein content of vinegar. By R. E. Remington.—Report of the coating and polishing of rice. By L. A. Congdon. Jan., 1912.
Vol. II, No. 2. [Miscellaneous items.] Feb., 1912.
Vol. II, No. 3. [Miscellaneous items including:] The immersion refractometer as a rapid means of approximating the solids in vinegar. By R. E. Remington.—Hard red spring wheat versus hard red winter wheat. By Thomas Sanderson.—A comparison of the baking strength of northern grown hard red winter and hard red spring wheats. Mar., 1912.
Vol. II, No. 4. [Miscellaneous items including:] A study of alkali soils. Apr., 1912.
Vol. II, No. 5. [Miscellaneous items including:] The ash of vinegar. By R. E. Remington. May, 1912.
Vol. II, No. 6. [Miscellaneous items including:] The eradication of quack grass by chemicals. By J. W. Ince. June, 1912.
Vol. II, No. 7. [Miscellaneous items including:] Improvement of flour in storage. By W. L. Stockman. Aug., 1912.
Vol. II, No. 8. [Miscellaneous items.] Sept., 1912.
Vol. II, No. 9. [Miscellaneous items.] Oct., 1912.
Vol. II, No. 10. [Miscellaneous items.] Nov., 1912.
Vol. II, No. 11. [Miscellaneous items.] Dec., 1912.
Vol. II, No. 12. [Miscellaneous items.] Jan., 1913.
Vol. II, No. 13. [Miscellaneous items including:] The invisible loss in milling. By Thomas Sanderson.—A study of the effect of sprouted wheat on the milling and baking quality of an average No. 2 northern wheat. Feb., 1913.
Vol. II, No. 14. [Miscellaneous items including:] A study of the different types of North Dakota grown wheat by grades for the five crops 1908 to 1912, inclusive. By Thomas Sanderson. Apr., 1913.
Vol. II, No. 15. [Miscellaneous items including:] Analysis and value of concentrated or condensed chicken soup. By L. A. Congdon. May, 1913.
Vol. II, No. 16. [Miscellaneous items.] June, 1913.
Vol. II, No. 17. [Miscellaneous items including:] The bacteriological standardization of some commercial disinfectants. By J. H. Wright. July, 1913.
Vol. II, No. 18. [Miscellaneous items including:] The bacteriological standardization of disinfectants. By J. H. Wright.—The effect of barley and rye on the milling and baking quality of wheat. By Thomas Sanderson.—Report on baking powders. By R. F. Remington. Aug., 1913.
Vol. II, No. 19. [Miscellaneous items including:] Some facts involved in the bacteriological testing of disinfectants. By J. H. Wright.—Lumbang oil. By R. W. Darner. Sept., 1913.
Vol. II, No. 20. [Miscellaneous items including:] The crease of the wheat kernel. By W. L. Stockham.—Wheat storage. Thomas Sanderson. Oct., 1913.
Vol. II, No. 21. [Miscellaneous items including:] Detection of the adulteration of linseed oil. By R. W. Darner. Nov., 1913.
Vol. II, No. 22. [Miscellaneous items including:] Milling and baking results of marquis vs. bluestem and fife wheats. By Thomas Sanderson.—Marquis wheat: Protein content, strength and adaptability. By W. L. Stockham. Dec., 1913.
Vol. II. Index.
Vol. III, No. 1. [Miscellaneous items including:] Oxygen absorption of linseed oil. By R. W. Darner.—A study of the variation in weight of a fifty pound sack of flour during storage. By Thomas Sanderson. Jan., 1914.
Vol. III, No. 2. [Miscellaneous items including:] Velvet chaff vs. fife and bluestem wheats.—The different types of hard red spring wheat grown in North Dakota from the milling and baking point of view. [By Thomas Sanderson].—The rank of velvet chaff among other spring varieties in baking strength and protein content, 1913. [By W. L. Stockham]. Jan., 1914.
Vol. III, No. 3. [Miscellaneous items.] Feb., 1914.
Vol. III, No. 4. [Miscellaneous items.] Mar., 1914.
Vol. III, No. 5. [Miscellaneous items including:] Investigation of commercial condensed soups. By L. A. Congdon. Apr., 1914.
Vol. III, No. 6. [Miscellaneous items including:] The color of flour from North Dakota wheat varieties. By W. L. Stockham. May, 1914.
Vol. III, No. 7. [Miscellaneous items.] June, 1914.
Vol. III, No. 8. [Miscellaneous items including:] Investigation of commercial fruit jellies. By L. A. Congdon.—Some varnish troubles. By R. W. Darner. July, 1914.
Vol. III, No. 9. Hard red spring wheats from the demonstration farms; studies of wheat quality under North Dakota conditions. By W. L. Stockman. Fertilizers, feeds, and fungicides. By J. W. Ince.—The use of sodium arsenite for killing weeds.—Spraying trials upon potatoes. Aug., 1914
Vol. III, No. 10. [Miscellaneous items.] Aug., 1914.
Vol. III, No. 11. Some North Dakota cities as we find them. Sept.–Oct., 1914.
Vol. III, No. 12. [Miscellaneous items.] Nov., 1914.
Vol. III, No. 13. [Miscellaneous items.] Dec., 1914.
Vol. III, No. 14. [Miscellaneous items including:] Is the present system of grading wheat equitable? By E. F. Ladd.—The use of Paris green and Bordeaux on the farm. By J. W. Ince. Jan., 1915.
Vol. III, No. 15. [Miscellaneous items including:] A further study of the variation in weight of a fifty-pound sack of flour during storage. By Thomas Sanderson. Feb., 1915.
Vol. III, No. 16. [Miscellaneous items.] Mar., 1915.
Vol. III, No. 17. [Miscellaneous items including:] A comparison of the value of the four types of hard red spring wheat, namely: Marquis, velvet chaff, bluestem, and fife. By Thomas Sanderson. Apr.–May 1915.
Vol. III, No. 18. [Miscellaneous items.] June, 1915.
Vol. III, No. 19. [Miscellaneous items.] July–Aug., 1915.
Vol. III, No. 20. [Miscellaneous items.] Sept., 1915.
Vol. III, No. 21. [Miscellaneous items including:] Corrosion of galvanized iron by corrosive sublimate. By R. W. Darner. Oct., 1915.
Vol. III, No. 22. [Miscellaneous items.] Nov., 1915.
Vol. III, No. 23. [Miscellaneous items.] Dec., 1915.
Vol. III, Index. Index to Special Bulletin, Food Department, Vol. III and to Paint Bulletins 5 and 6.
Vol. IV, No. 1. [Miscellaneous items including:] Note on the effect of the presence of glycerine in alcoholic determinations of beverages. By C. P. Guthrie. Jan., 1916.

Vol. IV, No. 2. [Miscellaneous items.] Feb.–Mar., 1916.
Vol. IV, No. 3. [Miscellaneous items including:] Filth, flies, food, fever. By Robert Hulbert. Apr., 1916.
Vol. IV, No. 4. [Miscellaneous items.] May, 1916.
Vol. IV, No. 5. The baby: The summer care of infants. By W. C. Rucker.—The feeding and care of the baby. June, 1916.
Vol. IV, No. 6. [Miscellaneous items including:] Drug plants of North Dakota. By M. A. Englehorn. Results of a questionnaire on canned corn. By R. E. Remington. July–Aug., 1916.
Vol. IV, No. 7. [Miscellaneous items.] Sept., 1916.
Vol. IV, No. 8. [Miscellaneous items.] Oct., 1916.
Vol. IV, No. 9. [Miscellaneous items.] Nov., and Dec., 1916.
Vol. IV, No. 10. [Miscellaneous items.] Jan., 1917.
Vol. IV, No. 11. [Miscellaneous items including:] The composition of canned corn. By R. E. Remington. Feb.–Mar., 1917.
Vol. IV, No. 12. [Miscellaneous items including:] The so-called "vitamines" or "food accessories" and their importance in the nutrition of animals. By F. W. Christensen. Apr., 1917.
Vol IV, No. 13. [Miscellaneous items including some food notes:] What foods can be used in place of potatoes and at the same time reduce the cost? How does the food value of skim milk and whole milk compare? How much may be saved by using bulk breakfast food as compared with those sold in packages? By R. E. Remington.– Save the potato. By Katherine Jensen. May, 1917.
Vol. IV, No. 14. [Miscellaneous items.] June July, 1917.
Vol. IV, No. 15. [Miscellaneous items.] Aug. Sept., 1917.
Vol. IV, No. 16. Patriotic number [on food conservation.] Oct., 1917.
Vol. IV, No. 17. Six years' milling tests by grades. By Thomas Sanderson. Nov. 1917.
Vol. IV, No. 18. [Miscellaneous items.] Dec., 1917.
Vol. IV. [Index.]
Vol. V, No. 1. [Miscellaneous items including:] The bread supply of Fargo. By R. E. Remington. Jan., 1918.
Vol. V, No. 2. [Miscellaneous items including:] The case against hard water. By Robert Hulbert. Mar., 1918.
Vol. V, No. 3. Flour from wheat of different test weights. By Thomas Sanderson. Apr., 1918.
Vol. V, No. 4. [Miscellaneous items including:] Shall we eat whole wheat bread? By F. W. Christensen.—Methods of varnish analysis. By W. T. Pearce.– A study of the fatty acids obtained from varnish oils and from varnishes. By W. T. Pearce.—Softening hard water. By Robert Hulbert. May and June, 1918.
Vol. V, No. 5. Wheat saving recipes. By Katherine Jensen and Julia O. Newton. July, 1918.
Vol. V, No. 6. A comparison of the Federal versus Minnesota [wheat] grading system. By Thomas Sanderson. Aug., 1918.
Vol. V, No. 7. [Miscellaneous items including:] The zeolite process of water softening; comparative analyses of commercial zeolites. By Robert Hulbert. Dec., 1918.
Vol. V, No. 8. The farmer's problem and the remedy. By E. F. Ladd. Jan., 1919.
Vol. V, No. 9. [Miscellaneous items including:] IV, Softening hard water with Permutit; Performance data from test operation of small size Permutit water softener on city water supply at Fargo, N. D. By Robert Hulbert. Mar., 1919.
Vol. V, No. 10. Sanitary inspection for 1918. Apr., 1919.
Vol. V, No. 11. [Miscellaneous items including:] Precipitates in bottled soda water. By C. P. Guthrie. May, 1919.
Vol. V, No. 12. [Miscellaneous items including:] Strawberries—weight per box. By F. C. Himber.—The chemical analysis of a few food preparations compared to the claims on the labels. By W. G. Bowers. July, 1919.
Vol. V, No. 13. Some studies on the nutritive value of the soy bean in the human diet. By W. G. Bowers. Aug., 1919.
Vol. V, No.14. [Miscellaneous items including:] Investigation of meat prices. By P. F. Trowbridge.—Meat investigations. By F. C. Himber.– Snuff and snuff substitutes: The limitations of chemical analyses in their identification. By Robert Hulbert. Oct., 1919.
Vol. V, No. 15. [Miscellaneous items.] Nov., 1919.
Vol. V, No. 16. [Miscellaneous items including:] North Dakota cities sanitary survey by R. O. Baird. Feb., 1920.
Vol. V, No. 17. Value of red durum or D 5 wheat. By Thomas Sanderson. Mar., 1920.
Vol. V, No. 18. Fargo and its grocery stores. Apr., 1920.
Vol. VI, No. 1. [Miscellaneous items.] June, 1920.
Vol. VI, No. 2. [Miscellaneous items including:] Cost of handling fruit. By F. C. Himber. Oct., 1920.
NOTE.—Subsequent numbers published by North Dakota Agricultural College, Regulatory Division.

OHIO.

Ohio Agricultural Experiment Station, Wooster.

The Ohio Experiment Station established in 1882 was originally located at Columbus, but was moved to Wooster in 1892; titles of Bulletins 3, 5, 8, and 15 could not be obtained.

BULLETINS, FIRST SERIES.[14]

1. Experiments with wheat, 1882–83. By W. R. Lazenby. Sept., 1883.
2. Test of varieties of wheat, with tables and explanatory notes. By W. R. Lazenby. 1884.
3.
4. Descriptive notes of varieties of winter wheat tested the past season. By W. R. Lazenby. 1884.
5.
6. Wheat, thick and thin seeding. By W. R. Lazenby. 1884.
7. Notes of varieties of strawberries. By W. R. Lazenby. 1884.
8.
9. Notes on different varieties of grasses. By W. R. Lazenby. 1884.
10. Notes on strawberries. By W. R. Lazenby. 1884.
11. Varieties of oats. By W. R. Lazenby. [1885?]
12. Varieties of corn. By W. R. Lazenby. [1885?]
13. Testing butter. By H. A. Weber. Mar., 1886.

[14] Bulletins of this series were issued for newspaper use and were afterward incorporated in the first six annual reports.

14. Varieties of potatoes, sweet corn, and cabbage. By W. B. Alwood and W. J. Green. [1885?
15.
16. Tests of varieties of wheat. [1886?]
17. Wheat experiments: Early and late seeding. By W. S. Devol. Aug., 1886.
18. Wheat experiments: Thick and thin seeding. By W. S. Devol. Aug., 1886.
19. Experiments with oats. By W. S. Devol. Sept., 1886.
20. *Strongylus contortus* in sheep. By H. J. Detmers. Nov., 1886.
21. Experiments with pig feeding. By W. S. Devol. Dec., 1886.
22. Experiments with fertilizers on potatoes. By W. J. Green. Jan., 1887.

BULLETINS, SECOND SERIES.

1. History, organization, and work of station. By C. E. Thorne. Apr., 1888.
2. Small fruits and vegetables. By W. J. Green. Apr., 1888.
3. The spring and summer treatment of apple orchards to prevent insect injuries; experiments with remedies for the plum curculio. By C. M. Weed. May, 1888.
4. Experiments in preventing curculio injury to cherries; the chinch bug in Ohio—midsummer remedies. By C. M. Weed. July, 1888.
5. Small fruits. By W. J. Green. Aug., 1888.
6. Experiments with wheat. By J. F. Hickman. Sept., 1888.
7. Corn: Fertilizer experiments. By C. E. Thorne. Dec., 1888.
8. (Vol. II, No. 1). Practical remedies for some Ohio insects; insecticides and their application; methods of collecting, preserving, and studying insects. By C. M. Weed. Mar., 1889.
9. (Vol. II, No. 2.) Colic of horses. By H. J. Detmers. Apr. and May, 1889.
10. (Vol. II, No. 3.) Silos and ensilage. By J. F. Hickman.—Ensilage versus field beets as food for cows. By C. E. Thorne and J. F. Hickman. June, 1889.
11. (Vol. II, No. 4.) Experiments with small fruits; effect of early and late picking upon keeping quality of apples. By W. J. Green. July, 1889.
12. (Vol. II, No. 5). Experiments in wheat seeding; comparative tests of varieties of wheat. By J. F. Hickman. Aug., 1889.
13. (Vol. II, No. 6.) Remedies for the plum curculio; remedies for the striped cucumber beetle; strawberry root louse and grain plant louse; notes on little-known injurious insects; preventing the injuries of potato rot. By C. M. Weed. Sept., 1889.
14. (Vol. II, No. 7.) Cabbage—comparison of varieties; cauliflower—comparison of varieties; Puget sound cabbage and cauliflower seed. By W. J. Green.—Notes on experiments with remedies for certain diseases of plants. By C. M. Weed. Nov., 1889.
15. (Vol. II, No. 8.) Eighth annual report for 1889. By C. E. Thorne [and others]. Dec., 1889.
16. (Vol. III, No. 1.) Experiments with potatoes. By W. J. Green. Jan., 1890.
17. (Vol. III, No. 2.) Commercial fertilizers. By C. E. Thorne and N. W. Lord. Feb., 1890.
18. (Vol. III, No. 3.) Experiments with corn; experiments with oats. J. F. Hickman.—Actinomycosis. By H. J. Detmers. Mar., 1890.
19. (Vol. III, No. 4.) Spraying to prevent insect injury; bark lice of the apple and pear; the buffalo tree hopper; insects affecting corn; ox warble fly or botfly; fungous diseases of plants and their remedies. By C. M. Weed.—Directions for collecting, preserving, and studying plants. By Freda Detmers. Apr., 1890.
20. (Vol. III, No. 5.) Corn silage versus sugar beets as food for milk production. By C. E. Thorne and J. F. Hickman. June, 1890.
21. (Vol. III, No. 6.) Experiments in wheat seeding; comparative tests of varieties of wheat; wheat smut. By J. F. Hickman. July, 1890.
22. (Vol. III, No. 7.) Strawberries; raspberries. By W. J. Green. Aug., 1890.
23. (Vol. III, No. 8.) Plum curculio experiments; remedies for striped cucumber beetle; the rhubarb curculio; the clover stem borer; potato-blight experiments. By C. M. Weed. Sept., 1890.
24. (Vol. III, No. 9.) Asparagus; transplanting onions. By W. J. Green. Oct., 1890.
25. (Vol. III, No. 10.) Preventing downy mildew or brown rot of grapes. By C. M. Weed.—The smut of Indian Corn. By C. E. Bessey. Nov., 1890.
26. (Vol. III, No. 11). Ninth annual report for 1890. By C. E. Thorne [and others]. Dec., 1890.
[27.] (Vol. IV, No. 1.) Experiments with corn. By J. F. Hickman and C. E. Thorne. Jan., 1891.
[28.] (Vol. IV, No. 2.) Miscellaneous experiments in the control of injurious insects; some common cabbage insects: three important clover insects. By C. M. Weed. Feb., 1891.
[29.] (Vol. IV, No. 3.) Commercial and other fertilizers on wheat. By C. E. Thorne and J. F. Hickman. Aug., 1891.
[30.] (Vol. IV, No. 4.) Experiments in wheat seeding, including treatment of seed for smut; comparative tests of varieties of wheat. By J. F. Hickman. Aug., 1891.
[31.] (Vol. IV, No. 5.) The wheat midge. By F. M. Webster. Sept., 1891.
[32.] (Vol. IV, No. 6.) Experiments with small fruits in 1891. By W. J. Green.—Diseases of the raspberry and blackberry. By Freda Detmers. Oct., 1891.
[33.] (Vol. IV, No. 7.) The Hessian fly. By F. M. Webster. Nov., 1891.
[34.] (Vol. IV, No. 8.) Forty years of wheat culture in Ohio. By C. E. Thorne. Nov., 1891.
[35.] (Vol. IV, No. 9.) Apple scab. Freda Detmers.—The spraying of orchards. By W. J. Green. Dec., 1891.
[36.] (Vol. IV, No. 10.) Tenth annual report for 1891. By C. E. Thorne [and others]. Dec., 1891.
[37.] (Vol. V, No. 1.) Oats. By J. F. Hickman. Jan., 1892.
[38.] (Vol. V, No. 2.) Mangold wurzels and sugar beets. By J. F. Hickman. Feb., 1892.
[39.] (Vol. V, No. 3.) Field experiments with commercial fertilizers. By C. E. Thorne and J. F. Hickman. Mar., 1892.
[40.] (Vol. V, No. 4.) Insects which burrow in the stems of wheat. [By F. M. Webster.] Apr., 1892.
[41.] Announcement concerning the publications of the Ohio experiment station. July, 1892.
42. Field experiments with wheat. By J. F. Hickman. Aug., 1892.
43. Greenhouses and greenhouse work. By W. J. Green.—Tomatoes as a greenhouse crop. By E. C. Green.—Lettuce as a greenhouse crop. By W. S. Turner.—The food of the robin. By F. V. Wilcox and F. M. Webster. Sept., 1892.
44. A preliminary list of the rusts of Ohio; wheat scab. By Freda Detmers.—Wild lettuce, a pestiferous weed. By C. E. Thorne. Sept., 1892.
45. Insects affecting the blackberry and raspberry. By F. M. Webster. Dec., 1892.
46. Underground insect destroyers of the wheat plant. By F. M. Webster. Dec., 1892.
47. Meteorological summary for 1892. By F. J. Falkenbach.—Eleventh annual report for 1892. By C. E Thorne [and others.] [Imprint] 1893.
48. Profit in spraying orchards and vineyards. By W. J. Green. Feb., 1893.
49. Field experiments with commercial fertilizers. By C. E. Thorne and J. F. Hickman. May, 1893.

50. Experiments in feeding for milk. By C. E. Thorne, J. E. Hickman, and F. J. Falkenbach. Nov., 1893.
51. Miscellaneous entomological papers. By F. M. Webster. Dec., 1893.
52. Meteorological summary for 1893. By F. J. Falkenbach.—Twelfth annual report for 1893. By C. E. Thorne [and others]. Dec., 1893.
53. Field experiments with commercial fertilizers. By C. E. Thorne and J. F. Hickman. Mar., 1894.
54. Strawberries; cultural notes; comparison of varieties. By W. J. Green and E. C. Green. Oct., 1894.
55. The Russian thistle in Ohio, and weeds in general. By A. D. Selby.—Ohio laws relative to weeds, black knot, and yellows. Oct., 1894. See 83.
56. The San José scale. By F. M. Webster. Dec., 1894.
57. Oats. By J. F. Hickman. Dec., 1894.
58. Meteorological summary for 1894. By C. A. Patton.—Thirteenth annual report for 1894. By C. E. Thorne [and others]. Dec., 1894.
59. Noxious weeds along thoroughfares and their destruction. By A. D. Selby. May, 1895. See 83.
60. Feeding for beef. By C. E. Thorne and J. F. Hickman. Aug., 1895.
61. Subirrigation in the greenhouse. By W. J. Green and E. C. Green. Sept., 1895.
62. The grape-root worm. By F. M. Webster. Oct., 1895.
63. Orchard spraying; notes on varieties of raspberries. By W. J. Green. Nov., 1895.
64. The smut of oats and its prevention. By A. D. Selby. Dec., 1895.
65. Potatoes: Comparison of varieties, experiments with fertilizers. By W. J. Green and H. O. McFadden. Dec., 1895.
66. Meteorological summary for 1895. By C. A. Patton.—Fourteenth annual report for 1895. By C. E. Thorne [and others]. Dec., 1895.
67. Oats: Comparison of varieties in 1895; effect of smut; methods of seeding; preparation of seed bed. By J. F. Hickman. Feb., 1896.
68. Some destructive insects; spraying with arsenites vs. bees; carnivorous habits of *Limax campestris*. By F. M. Webster. Feb., 1896.
69. The chinch bug. By F. M. Webster. Mar., 1896.
70. Forage crops. By J. F. Hickman. Apr., 1896.
71. The maintenance of fertility: Field experiments with fertilizers; the sources and cost of fertilizing materials; the home mixing of fertilizers. By C. E. Thorne, J. F. Hickman, and W. J. Green.—A fertilizer with misleading name. By A. D. Selby. Apr., 1896.
72. Peach yellows and black knot. By A. D. Selby.—San José scale. By F. M. Webster. Aug., 1896.
73. Investigation of plant diseases in forcing house and garden: Diseases of lettuce; diseases caused by nematodes; leaf mildews—spraying with fungicides under glass; diseases of cucurbits; tomato diseases. By A. D. Selby. Dec., 1896.
74. Meteorological summary for 1895 [i. e. 1896]. By C. A. Patton.—Fifteenth annual report for 1896. By C. E. Thorne [and others]. Dec., 1896.
75. Beet sugar production. By C. E. Thorne and W. A. Henry. Jan., 1897. Reprinted with some changes from Wisconsin Sta. Bul. 55.
76. Potatoes: Cultural notes, variety tests; experiments with fertilizers. By W. J. Green. Feb., 1897.
77. The chinch bug and other destructive insects. By F. M. Webster. Feb., 1897.
78. Corn: Cultural investigations; comparison of varieties; corn smut. By J. F. Hickman. Apr., 1897.
79. Some diseases of orchard and garden fruits with spray calendar supplement. By A. D. Selby. Apr., 1897. See 102.
80. The maintenance of fertility: Field experiments with fertilizers in 1896. By C. E. Thorne, J. F. Hickman, and W. J. Green. July, 1897.
81. The San José scale in Ohio. By F. M. Webster. July, 1897.
82. Field experiments with wheat: Comparison of varieties; cultural investigations. By J. F. Hickman. Aug., 1897.
83. A first Ohio weed manual. By A. D. Selby. Sept., 1897. Supersedes 55 and 59. See 175.
84. Sixteenth annual report for [Jan.–June], 1897. C. E. Thorne [and others]. July, 1897.
85. Strawberries. By W. J. Green. Sept., 1897.
86. The story of the lives of a butterfly and a moth. By F. M. Webster. Oct., 1897. Second edition, 1899.
87. The periodical cicada (*Cicada septendecim*) or so-called seventeen-year locust in Ohio. By F. M. Webster. Nov., 1897.
88. Cooperative experiments made by the Ohio Agricultural Students' Union in 1896. By L. M. Bloomfield and J. S. Hine. Dec., 1897.
89. Prevalent diseases of cucumbers, melons, and tomatoes. By A. D. Selby. Dec., 1897.
90. Sugar-beet investigations in 1897. By A. D. Selby and L. M. Bloomfielfd. Jan., 1898.
91. The lung and stomach worms of sheep. By C. E. Thorne and J. E. Wing. Jan., 1898.
92. Preliminary report upon diseases of the peach; experiments in spraying peach trees. By A. D. Selby. Mar., 1898.
93. The home mixing of fertilizers. By C. E. Thorne. Apr., 1898.
94. The maintenance of fertility: Field experiments with fertilizers in 1897. By C. E. Thorne. June, 1898.
95. Meteorological summary for 1897. By C. A. Patton.—Seventeenth annual report for 1898. By C. E. Thorne [and others]. July, 1898.
96. The Army worm and other insects. By F. M. Webster and C. W. Mally. Sept., 1898.
97. Some diseases of wheat and oats: The smuts, rust and scab of wheat; further experiments in the prevention of oat smut. By J. F. Hickman and A. D. Selby. Dec., 1898.
98. Small fruits: Cultural notes and comparison of varieties. By W. J. Green. Jan., 1899.
99. Sugar-beet investigations in 1898. By A. D. Selby. Jan., 1899.
100. The home mixing of fertilizers. By C. E. Thorne. Feb., 1899.
101. Oats. By J. F. Hickman. Mar., 1899.
102. Seed and soil treatment and spray calendar for insect pests and plant diseases. By W. J. Green, A. D. Selby, and F. M. Webster. Mar., 1899. A revision of 79. See 147.
103. The San José scale problem in Ohio in 1898. By F. M. Webster. Mar., 1899.
104. Further studies upon spraying peach trees and upon diseases of the peach. By A. D. Selby. Mar., 1899.
105. Further studies of cucumber, melon, and tomato diseases. By A. D. Selby. Apr., 1899.
106. The chinch bug; experiments with insecticides. By F. M. Webster. Apr., 1899.
107. The Hessian fly. By F. M. Webster. May, 1899.
108. Bovine tuberculosis. By C. E. Thorne. Jan., 1899.
109. Meteorological summary for 1898. By C. A. Patton.—Eighteenth annual report for 1898–99. By C. E. Thorne [and others]. July, 1899.
110. The maintenance of fertility: Field experiments with fertilizers, 1888–1899. By C. E. Thorne. Dec., 1899.
111. Investigations of plant diseases. By A. D. Selby. Dec., 1899.

112. The clover root borer. By F. M. Webster. Dec., 1899.
113. Plums: A comparison of varieties. By W. J. Green. Dec., 1899.
114. How insects are studied at the Ohio Agricultural Experiment Station. By F. M. Webster. Jan., 1900.
115. Sugar beets and sorghum: Investigations in 1899. By A. D. Selby. Jan., 1900.
116. The grape-cane gall maker and its enemies. By F. M. Webster. Feb., 1900.
117. Stomach worms in sheep. By J. F. Hickman. Apr., 1900.
118. Field experiments with wheat. By J. F. Hickman. June, 1900.
119. The Hessian fly in 1899 and 1900. By F. M. Webster. June, 1900.
120. Meteorological summary for 1899. By C. A. Patton.—Press bulletins [194–211].—Nineteenth annual report for 1899–1900. By C. E. Thorne [and others]. July, 1900.
121. A condensed handbook of the diseases of cultivated plants in Ohio. By A. D. Selby. Sept., 1900. See 214.
122. Onion smut: Preliminary experiments. By A. D. Selby. Dec., 1900.
123. Grape rots in Ohio. By A. D. Selby.—Experiments in the prevention of grape rot. By A. D. Selby and J. F. Hicks. Jan., 1901.
124. The maintenance of fertility: Field experiments with fertilizers on corn, oats, and wheat in 1899 and 1900. By C. E. Thorne. Mar., 1901.
125. The maintenance of fertility: Field experiments with fertilizers on potatoes, 1894 to 1900. By C. E. Thorne. Mar., 1901.
126. Sugar beet investigations in Ohio in 1900. By A. D. Selby and J. W. Ames. Mar., 1901.
127. Miscellaneous chemical analyses of feeds, foods, grains, fruits, insecticides, fertilizing materials, limestones and mineral waters, 1892–1901. By A. D. Selby and J. W. Ames. June, 1901.
128. Meteorological summary for 1900. By C. A. Patton.—Press bulletins [212–224].—Twentieth annual report for 1900–1901. By C. E. Thorne [and others]. General index to reports and bulletins, Volumes 1 to 20, 1882 to 1901. June, 1901.
129. Field experiments with wheat. By J. F. Hickman. Aug., 1901.
130. Spraying for grape rot. By A. D. Selby and J. F. Hicks.—The relation of grape spraying to public health. By A. D. Selby. Jan., 1902.
131. The prevention of onion smut. By A. D. Selby. Jan., 1902.
132. Sugar-beet investigations in 1901. By J. W. Ames. Jan., 1902.
133. Potatoes. By W. J. Green and C. W. Waid. Mar., 1902.
134. The value of barnyard manure. By C. E. Thorne and J. F. Hickman. May, 1902. Revised edition. May, 1904.
135. Meteorological summary for 1901. By C. A. Patton.—Press bulletins [225–239].—Twenty-first annual report for 1901–1902. By C. E. Thorne [and others.] June, 1902.
136. The Hessian fly in Ohio. By C. E. Thorne. Dec., 1902.
137. Suggestions concerning apple culture. By W. J. Green. Feb., 1903.
138. Experiments with oats. By C. G. Williams. Mar., 1903.
139. A rosette disease of potatoes. By A. D. Selby. Apr., 1903.
140. The corn crop. By C. G. Williams. Apr., 1903.
141. The maintenance of fertility: Field experiments with fertilizers on cereal crops; lime and clover; the home mixing of fertilizers. By C. E. Thorne. June, 1903.
142. Clover and alfalfa seeds. By A. D. Selby and J. F. Hicks. June, 1903.
143. Twenty-second annual report for 1902–3. By C. E. Thorne [and others].—Meteorological summary for 1903. By C. A. Patton.—Press bulletins [240–250]. June, 1903.
144. Experiments with sulphur sprays for the fall treatment of the San José scale. By P. J. Parrott and J. S. Houser. Oct., 1903.
145. Studies in potato rosette, II. By A. D. Selby. Nov., 1903.
146. Varieties of strawberries and raspberries. By W. J. Green and C. W. Waid. Dec., 1903.
147. Seed and soil treatment and spray calendar for insect pests and plant diseases. By W. J. Green and A. D. Selby. Jan., 1904. Revision of 102. See 199.
148. Peach diseases, III. By A. D. Selby. Feb., 1904.
149. The hardy catalpa as a farm crop. By W. J. Green. Mar., 1904.
150. Ohio soil studies: I, Chemical and mechanical analyses of the soils under experiment; types represented; discussion of results. By A. D. Selby and J. W. Ames. May, 1904.
151. Proceedings of the second annual reunion of the Ohio State Board of Agriculture, the College of Agriculture, Ohio State University, the farmers' institute lecturers of Ohio, and the Ohio Agricultural Experiment Station. June, 1904.
152. Twenty-third annual report for 1903–4. By C. E. Thorne [and others].—Meteorological summary for 1903. By C. A. Patton.—Press bulletins [251–260]. June, 1904.
153. Forcing tomatoes. By W. J. Green and C. W. Waid. Aug., 1904.
154. Varieties of strawberries. By W. J. Green and F. H. Ballou. Sept., 1904.
155. Silage vs. grain for dairy cows. By C. G. Williams. Oct., 1904.
156. Tobacco diseases; tobacco breeding. By A. D. Selby. Nov., 1904.
157. Winterkilling of peach trees. By W. J. Green and F. H. Ballou. Dec., 1904.
158. Forestry investigations, I. By W. J. Green and C. W. Waid. Jan., 1905.
159. The maintenance of fertility: Liming the soil. By C. E. Thorne. Mar., 1905.
160. The codling moth. By W. J. Green and J. S. Houser. Apr., 1905.
161. Experiments with fertilizers on tobacco. By C. E. Thorne. Apr., 1905.
162. Plums for home and market. By W. J. Green and F. H. Ballou. May, 1905.
163. Twenty-fourth annual report for 1904–1905. By C. E. Thorne [and others].—Meteorological summary for 1904. By C. A. Patton.—Press bulletins [261–265]. June, 1905.
164. Winter practice in economic zoology. By H. A. Gossard. July, 1905.
165. Experiments with winter wheat. By C. G. Williams. Aug., 1905.
166. The newer strawberries. By W. J. Green and F. H. Ballou. Sept., 1905.
167. The maintenance of fertility: Fertility studies on Wooster soil. By A. H. Snyder and C. L. Cook. Oct., 1905.
168. The maintenance of fertility: Fertility studies on Strongsville soil. By A. H. Snyder and C. L. Cook. Dec., 1905.
169. Spraying for the San José scale. By J. S. Houser. Jan., 1906.
170. Peaches for home and market. By W. J. Green and F. H. Ballou. Feb., 1906.
171. Orchard culture. A comparison of different methods as applied in the care of the apple orchard. By W. J. Green and F. H. Ballou. Mar., 1906.
172. Experiments with fertilizers on tobacco. By C. E. Thorne. Mar., 1906.
173. Blighting of field and garden peas, chiefly due to seed infection; powdery mildew of the pea. By J. M. Van Hook. Apr., 1906.
174. Potato investigations: Variety tests; spraying and seed selection experiments. By W. J. Green and C. W. Waid. Apr., 1906.
175. A second Ohio weed manual. By A. D. Selby. May, 1906. A revision of 83.

176. Twenty-fifth annual report for 1905–6. By C. E. Thorne [and others]. Meteorological summary for 1905. By C. A. Patton.—Press bulletins [266–275]. June, 1906.
177. The Hessian fly. By H. A. Gossard and J. S. Houser. Aug., 1906.
178. The strawberry test plot. By F. H. Ballou. Sept., 1906.
179. Fattening range lambs. By B. E. Carmichael. Dec., 1906.
180. Renewal of old orchards. By F. H. Ballou. Feb., 1907.
181. Alfalfa in Ohio. By C. G. Williams and C. H. Kyle. Apr., 1907.
182. The maintenance of fertility: Field experiments with fertilizers on cereal crops and potatoes; summary of results for 13 years, 1894–1906, inclusive. By C. E. Thorne. May, 1907.
183. The maintenance of fertility: The production of manure; the reinforcement of manure; the value of manure. [By C. E. Thorne]. June, 1907.
184. The maintenance of fertility: Statistics of production in field experiments with fertilizers and manures from 1894 to 1906, inclusive. Appendix to bulletins 182 and 183. [By C. E. Thorne.] June, 1907.
185. Twenty-sixth annual report for 1906–7. By C. E. Thorne [and others].—Meteorological summary for 1906. By C. A. Patton.—Press bulletins [276–285]. July, 1907.
186. Strawberries: The newer varieties. By F. H. Ballou. Aug., 1907.
187. Fattening range lambs. By B. E. Carmichael. Nov., 1907.
188. First report on forest conditions in Ohio. By C. E. Thorne and W. J. Green. Dec., 1907.
189. Forestry suggestions. By W. J. Green and Edmund Secrest. Jan., 1908.
190. Evergreens, their uses and culture. By W. J. Green and W. E. Bontrager. Feb., 1908.
191. Spraying apples. By H. A. Gossard. Feb., 1908.
192. Fall and early winter injuries to orchard trees and shrubbery by freezing. By A. D. Selby. Feb., 1908.
193. Silage for fattening cattle. By B. E. Carmichael. May, 1908.
194. The more important insects affecting Ohio shade trees. By J. S. Houser. June, 1908. See 332.
195. Feeding work horses. By B. E. Carmichael. June, 1908.
196. Twenty-seventh annual report for 1907–8. By C. E. Thorne [and others].—Meteorological summary for 1907. By C. A. Patton.—Press bulletins [286–292]. July, 1908.
197. The catalpa midge. By H. A. Gossard. Oct., 1908.
198. Spring manual of practice in economic zoology. By H. A. Gossard. Nov., 1908.
199. Spray calendar with seed and soil treatment methods. By W. J. Green, A. D. Selby, and H. A. Gossard. Dec., 1908. A revision of 147. See 232.
200. Second annual report on forest conditions in Ohio. [By C. E. Thorne] and W. J. Green. Dec., 1908.
201. The mineral elements in animal nutrition. By E. B. Forbes. Jan., 1909. A corrected edition was issued to replace copies first distributed.
202. The raspberry Byturus (*Byturus unicolor*). By W. H. Goodwin. Feb., 1909.
203. Studies in diseases of cereals and grasses. By A. D. Selby and T. F. Manns. April, 1909.
204. Forest conditions in Ohio. By W. J. Green and Edmund Secrest. June, 1909.
205. Twenty-eighth annual report for 1908–1909. By C. E. Thorne [and others].—Meteorological summary for 1908. By C. A. Patton.—Press bulletins [293–303]. July, 1909.
206. The maintenance of fertility: Field experiments with fertilizers and manures on tobacco, corn, wheat, and clover in the Miami Valley. Aug., 1909.
207. The balance between inorganic acids and bases in animal nutrition. By E. B. Forbes. Aug., 1909.
208. Protection of fruit trees from rodents. By F. H. Ballou. Aug., 1909.
209. Rations for fattening swine. By B. E. Carmichael. Aug., 1909.
210. The blade blight of oats, a bacterial disease. By T. F. Manns. Oct., 1909.
211. Third annual report on forest conditions in Ohio. By C. E. Thorne, W. J. Green, and Edmund Secrest. Nov., 1909.
212. Corn judging: Studies of prominent ear characters in their relation to yield. By C. G. Williams and F. A. Welton. Dec., 1909.
213. Specific effects of rations on the development of swine. By E. B. Forbes. Dec., 1909.
214. A brief handbook of the diseases of cultivated plants in Ohio. By A. D. Selby. Mar., 1910. A revision of 121.
215. Methods for the quantitative estimation of inorganic phosphorus in vegetable and animal substances. By E. B. Forbes, A. Lehmann, R. C. Collison, and A. C. Whittier. Apr., 1910.
216. Spraying machinery. By W. H. Goodwin. Apr., 1910.
217. Apple culture in Ohio. By F. H. Ballou. May, 1910.
218. The status of the potato-growing industry in Ohio. By F. H. Ballou.—Seasonal notes on potatoes. By J. H. Gourley. June, 1910.
219. The relative durability of post timbers. By J. J. Crumley. June, 1910.
220. Twenty-ninth annual report for 1909–10. By C. E. Thorne [and others].—Meteorological summary for 1909. By C. A. Patton.—Press bulletins [304–314]. July, 1910.
221. The composition of wheat: Influence of various factors on the phosphorus, potassium, and nitrogen content of the wheat plant. By J. W. Ames. Nov., 1910.
222. The mineral nutrients in blue-grass. By E. B. Forbes, A. C. Whittier, and R. C. Collison. Dec., 1910.
223. Fourth annual report on forest conditions in Ohio. By W. J. Green. Nov., 1910.
224. The rejuvenation of orchards: Report of spraying experiments in southeastern Ohio, 1910. By F. H. Ballou. Dec., 1910.
225. The farm grasses of Ohio. By C. G. Williams. Jan., 1911.
226. The wheat joint worm. By J. S. Houser. Feb., 1911.
227. Farm equipment. By L. W. Ellis. Feb., 1911.
228. Two recent important cabbage diseases of Ohio. By T. F. Manns. Mar., 1911.
229. The Fusarium blight (wilt) and dry rot of the potato: Preliminary studies and field experiments. By T. F. Manns. May, 1911.
230. Thirtieth annual report for 1910–1911. By C. E. Thorne [and others].—Meteorological summary for 1910. By C. A. Patton.—Press bulletins [315–322]. July, 1911.
231. Wheat experiments. By C. G. Williams and F. A. Welton. July, 1911.
232. Spray calendar with seed, soil, and disinfection treatment methods. By W. J. Green, A. D. Selby, and H. A. Gossard. Dec., 1911. A revision of 199. See 309.
233. Fall manual of practice in economic zoology. By H. A. Gossard. Nov., 1911.
234. Flour mill fumigation. By W. H. Goodwin. Jan., 1912.
235. The climate of Ohio. By J. W. Smith. Jan., 1912.
236. Strawberry notes for 1910–11. By W. J. Green, J. H. Gourley, and Paul Thayer. Feb., 1912.
237. The soybean and cowpea. By C. G. Williams and F. A. Welton. Feb., 1912.
238. Tobacco culture in Ohio: Results of investigations from 1903 to 1911. By A. D. Selby and True Houser. Mar., 1912.
239. Tobacco: Breeding cigar filler in Ohio, report in hybridizing and selection work in the Miami Valley district, 1903–1911. By A. D. Selby and True Houser. Apr., 1912.
240. The rejuvenation of orchards: Report of spraying, fertilization, and thinning experiments in southeastern Ohio, 1911. By F. H. Ballou. June, 1912.

241. County experiment farms in Ohio: Their organization and work in 1911. By C. E. Thorne, C. G. Williams, and Charles McIntire. June, 1912.
242. Forage crops for swine. By B. E. Carmichael and G. R. Eastwood. June, 1912.
243. Effect of fertilizers on the physical and chemical properties of wheat. By J. W. Ames, G. E. Boltz, and J. A. Stenius. June, 1912.
244. Sweet clover (Melilotus): A field survey of its distribution, soil adaptation, habits, and agricultural value. By W. A. Lloyd. June, 1912.
245. Rations for fattening range lambs. By B. E. Carmichael and J. W. Hammond. June, 1912.
246. Barnyard manure: Production, composition, conservation, reinforcement, and value. By J. W. Ames and E. W. Gaither. June, 1912.
247. Nitrogen and mineral constituents of the alfalfa plant. By J. W. Ames and G. E. Boltz. June, 1912.
248. Spraying machinery accessories. By W. H. Goodwin. June, 1912.
249. Thirty-first annual report for the year ending June 30, 1912. By C. E. Thorne [and others].—Ohio weather in 1911. By J. W. Smith and C. A. Patton.—Meteorological summary for 1911. By C. A. Patton.—Press bulletins [323-348]. July, 1912.
250. Some Ohio birds. By H. A. Gossard and S. G. Harry. Aug., 1912.
251. The wheat leaf miner (*Agromyza parvicornis* Loew). By J. S. Houser. Sept., 1912.
252. Early cabbage. By W. J. Green and S. N. Green. Dec., 1912.
253. Insect pests of the household. By R. D. Whitmarsh. Dec., 1912.
254. Fifth annual report of forest conditions in Ohio. By Edmund Secrest. Dec., 1912.
255. Mineral and organic analyses of foods: New methods for the determination of sodium and crude fiber. By E. B. Forbes, F. M. Beegle, and J. E. Mensching. Jan., 1913.
256. The Miami County experiment farm: Second annual report for 1912. By Charles McIntire.—The family apple orchard. By W. J. Green.—Some animal parasites of the Miami County hog. By D. C. Mote. Feb., 1913.
257. Oats. By C. G. Williams and F. A. Welton. Feb., 1913.
258. The Paulding County experiment farm: Second annual report for 1912. By Charles McIntire. Feb., 1913.
259. Ohio weather for 1912. By J. W. Smith and C. A. Patton. Mar., 1913.
260. The maintenance of fertility: The Strongsville experiments. [By C. E. Thorne and Edward Mohn]. Apr., 1913.
261. Soil investigations: Composition of calcareous and noncalcareous soils, with special reference to phosphorus supply. By J. W. Ames and E. W. Gaither. June, 1913.
262. Experiments with poultry. By R. M. Sherwood and W. J. Buss. June, 1913.
263. Thirty-second report for 1912-1913. By C. E. Thorne [and others].—Press Bulletins [349-352]. July, 1913.
264. Orchard bark beetles and pin hole borers. By H. A. Gossard. Oct., 1913.
265. The cob rot of corn. By F. G. Arrberger. Nov., 1913.
266. Labor cost of producing corn in Ohio. By L. H. Goddard and W. L. Elser. Dec., 1913.
267. The value of soybean and alfalfa hay in milk production. By R. E. Caldwell. Dec., 1913.
268. Substitutes for corn in rations for fattening swine. By G. E. Eastwood. Jan., 1914.
269. Forage crops. Annual grasses and roots. By C. G. Williams and F. A. Welton. Jan., 1914.
270. Experiments in winter lamb production. By J. W. Hammond. Feb., 1914.
271. A chemical study of the nutrition of swine. By E. B. Forbes, F. M. Beegle, C. E. Fritz, and J. E. Mensching. Feb., 1914.
272. The Hamilton County experiment farm: Second annual report for the year 1913. May, 1914.
273. The Paulding County experiment farm: Third annual report for 1913. May, 1914.
274. The Miami County experiment farm: Third annual report for 1913. June, 1914.
275. The Clermont County experiment farm: Second annual report for 1913. June, 1914.
276. Sixth annual report on forestry operations. By Edmund Secrest. June, 1914.
277. Ohio weather for 1913. By J. W. Smith and C. A. Patton. June, 1914.
278. Thirty-third annual report for 1913-1914.—By C. E. Thorne [and others].—Press bulletins [353-354]. June, 1914.
279. The maintenance of fertility: Liming the land. By C. E. Thorne. July, 1914.
280. Some important animal parasites affecting Ohio livestock. By D. C. Mote. Dec., 1914.
281. Summer treatment of greenhouse soil. By W. J. Green and S. N. Green. Jan., 1915.
282. Corn experiments. By C. G. Williams and F. A. Welton. Feb., 1915.
283. Specific effects of rations on the development of swine. Second paper. By E. B. Forbes, F. M. Beegle, C. M. Fritz, L. E. Morgan, and S. N. Ruehe. Apr., 1915.
284. Rations for growing and fattening roasters and capons. By W. J. Buss. May, 1915.
285. Tobacco: Influence of fertilizers on composition and quality. By J. W. Ames and G. E. Boltz.—Experiments with fertilizers and manure on tobacco grown continuously and in rotation with wheat and clover. By C. E. Thorne. May, 1915.
286. County experiment farms in Ohio: Annual reports for 1914. By C. W. Montgomery and C. E. Thorne. May, 1915.
287. Ohio weather for 1914. By J. W. Smith and C. A. Patton. June, 1915.
288. Thirty-fourth annual report for 1914-15. By C. E. Thorne [and others]. Press bulletins [355-359]. June, 1915.
289. Raising dairy heifers: Cost, feeding and care. By C. C. Hayden. Aug., 1915.
290. Varieties of apples in Ohio. By W. J. Green, Paul Thayer, J. B. Keil. Dec., 1915.
291. Experiments with laying hens: Range versus confinement; variety versus simple rations; various amounts of protein in rations. By W. J. Buss. Feb., 1916.
292. Sulphur in relation to soils and crops. By J. W. Ames and G. E. Boltz. Mar., 1916.
293. The grape-berry worm (*Polychrosis viteana* Clemens). By W. H. Goodwin. Mar., 1916.
294. Wool studies: Washing before shearing, time of shearing. By J. W. Hammond. Apr., 1916.
295. The mineral metabolism of the milch cow. First paper. By E. B. Forbes and F. M. Beegle. Apr., 1916.
296. Ohio weather for 1915. By J. W. Smith and C. A. Patton. Apr., 1916.
297. The clover leaf tyer (*Ancylis angustiorana* Zeller). By H. A. Gossard. May, 1916.
298. Wheat experiments. By C. G. Williams. May, 1916.
299. The iodine content of foods. By E. B. Forbes and F. M. Beegle. June, 1916.
300. Thirty-fifth annual report for 1915-16. By C. E. Thorne [and others]. June, 1916.
301. Orchard rejuvenation in southeastern Ohio. By F. H. Ballou and W. J. Green. July, 1916.
302. Marketing of woodlot products. By J. W. Calland. Aug., 1916.
303. County experiment farms in Ohio: Annual reports for 1915. By C. W. Montgomery [and others]. Sept., 1916.
304. The possible Wayne County farm. By C. E. Thorne. Nov., 1916.
305. Raw phosphate rock as a fertilizer. By C. E. Thorne.—Ohio experiments. By C. E. Thorne, C. G. Williams and J. W. Ames. Nov., 1916.
306. Liming and lime requirement of soil. By J. W. Ames and C. J. Schollenberger. Dec., 1916.

307. The lesser peach tree borer (*Synanthedon pictipes* Grote and Robinson). By J. L. King. Jan., 1917.
308. The mineral metabolism of the milch cow: Second paper. By E. B. Forbes [and others]. Jan., 1917.
309. Spray calendar with seed, soil and disinfection treatment methods. By W. J. Green, A. D. Selby, and H. A. Gossard. Jan., 1917. A revision of 232.
310. The green soldier bug (*Nezara hilaris* Say). By R. D. Whitmarsh. Feb., 1917.
311. Distribution of the Ohio broods of periodical cicada with reference to soil. By H. A. Gossard. Mar., 1917.
312. Soybean culture. By C. G. Williams.—Uses of soybeans. By J. B. Park. Mar., 1917.
313. Dependable fruits. By W. J. Green, Paul Thayer, and J. B. Keil. Mar., 1917.
314. Ohio weather for 1916. By W. H. Alexander and C. A. Patton. June, 1917.
315. Thirty-sixth annual report for 1916–17. By C. E. Thorne [and others]. June, 1917.
316. Proportions of supplements to corn for fattening swine. By W. L. Robison. Sept., 1917.
317. The pink and green aphid of potato (*Macrosiphum solanifolii* Ashm.). By J. S. Houser, T. L. Guyton, and P. R. Lowry. Nov., 1917.
318. Relation of phosphorus and nitrogen in soil to the composition of wheat. By J. W. Ames and G. E. Boltz. Nov., 1917.
319. Potato diseases. By D. C. Babcock. Nov., 1917.
320. Some external parasites of poultry. By D. C. Mote. Dec., 1917.
321. Tomato diseases in Ohio. By J. G. Humbert. Feb., 1918.
322. Feeding experiments with laying hens: Range versus confinement; variety versus simple rations; comparison of tankage and meat scrap; various amounts of protein in rations; different methods of feeding; egg production of early, medium and late hatched pullets; comparison of corn and wheat. By W. J. Buss. Mar., 1918.
323. County experiment farms in Ohio: Annual reports for 1916 and 1917. By C. W. Montgomery [and others]. May, 1918.
324. Ohio weather for 1917. By W. H. Alexander and C. A. Pattou. June, 1918.
325. Thirty-seventh annual report for 1917–18. By C. E. Thorne and others. June, 1918.
326. The agriculture of Ohio: History of Ohio agriculture. By W. A. Lloyd.—Ohio agriculture from 1850 to 1910. By J. I. Falconer.—Crop production in Ohio since 1850. By C. E. Thorne. July, 1918.
327. Clover versus alfalfa for milk production. By C. C. Hayden. July, 1918.
328. Livestock versus grain farming. By C. G. Williams. July, 1918.
329. The peach tree borer (*Sannioidea exitiosa* Say), order, Lepidoptera, family, Aegeriidae. By H. A. Gossard and J. L. King. Sept., 1918.
330. The mineral metabolism of the milch cow. Third paper. By E. B. Forbes [and others]. Sept., 1918.
331. The farmers' elevator movement in Ohio. By H. E. Erdman. Nov., 1918.
332. Destructive insects affecting Ohio shade and forest trees. By J. S. Houser. Nov., 1918. Supersedes 194.
333. Apple blotch, a serious fruit disease. By A. D. Selby. Feb., 1919.
334. Dairy production in Ohio. By R. I. Grady and M. O. Bugby. Feb., 1919.
335. Effect of age of pigs on the rate and economy of gains. By W. L. Robison. Mar., 1919.
336. The maintenance of soil fertility: A quarter century's work with manure and fertilizers. Plans and summary tables of the field experiments at the central farms, Wooster, and the district experiment farms at Strongsville, Germantown, Carpenter and Findlay. [By C. E. Thorne and others.] Apr., 1919.
337. Ohio weather for 1918. By W. H. Alexander and C. A. Patton. June, 1919.
338. Thirty-eighth annual report for 1918–19. By C. E. Thorne [and others]. June, 1919.
339. Orchard rejuvenation in southeastern Ohio. (Second report.) By F. H. Ballou and I. P. Lewis. Apr., 1920.
340. Green forage crops and corn for fattening lambs. By J. W. Hammond. May, 1920.
341. The chrysanthemum gall midge (*Diarthronomyia hypogaea* F. Low). By T. L. Guyton. May, 1920.
342. Organizations among Ohio farmers: Extent and nature of business and farm improvement associations. By H. E. Erdman. June, 1920.
343. The use of forage crops in the fattening of pigs. By W. L. Robison. June, 1920.
344. County experiment farms in Ohio: Annual reports for 1918 and 1919. [By C. W. Montgomery and others.] June, 1920.
345. Ohio weather for the year 1919. By W. H. Alexander and C. A. Patton. June, 1920.
346. Thirty-ninth annual report for 1919–20. By C. E. Thorne [and others]. June, 1920.

SPECIAL BULLETINS.

1. Bovine tuberculosis in its relation to the public health. Nov., 1898.
2. Proposed slaughter of tuberculous cattle. Mar., 1899.
3. Proposed slaughter of tuberculous cattle. Apr., 1899.
3. Sorghum. By C. E. Thorne. Apr., 1900.
4. Clover seed. By A. D. Selby. Apr., 1900.

TECHNICAL BULLETINS.

Vol. I, No. 1. Preparatory stages of the 20-spotted ladybird; studies in pond life; a partial bibliography of insects affecting clover. By C. M. Weed. Oct., 1889.
Vol. I, No. 2. Flowering plants on grounds of the Ohio State University. By Moses Craig.—Fourth contribution to life history of little known plant lice. By C. M. Weed.—Descriptive catalogue of the shells of Franklin County, Ohio. By H. A. Surface. May, 1890.
Vol. I, No. 3. Entomological and botanical papers. By F. M. Webster [and others]. Apr., 1893.
Vol. I, No. 4. A preliminary list of the birds of Wayne County, Ohio. By H. C. Oberholser. July, 1896.
5. A review of the literature of phosphorus compounds in animal metabolism. By E. B. Forbes and M. H. Keith. Mar., 1914.
6. The metabolism of organic and inorganic compounds of phosphorus. By E. B. Forbes [and others]. Mar., 1914.
7. On nitrification: Preliminary observations. By E. R. Allen and A. Bonazzi. Apr., 1915.
8. Studies on the estimation of inorganic phosphorus in plant and animal substances. By E. B. Forbes, F. M. Beegle, and A. F. D. Wussow. June, 1915.

MISCELLANEOUS.

Wood-using industries of Ohio. By C. W. Dunning. 1912.

INDEXES.

General index to reports and bulletins volumes 1-20, 1882–1901 (Ohio Agr. Expt. Sta. Bul. 128, Index supplement).

OKLAHOMA.

Oklahoma Agricultural Experiment Station, Stillwater.

BULLETINS.

1. General information, organization, and history. By J. C. Neal and A. C. Magruder. Dec., 1891.
2. Station record. By J. C. Neal. Mar., 1892.
3. Station notes: Insects. By J. C. Neal. June, 1892.
4. Tests of varieties: Oats, corn, spring wheat, Irish and sweet potatoes. By A. C. Magruder and J. C. Neal. Oct., 1892.
5. Some soil analyses. By G. L. Holter and J. C. Neal. Jan., 1893.
6. Notes of progress, analyses i. e. Notes of progress. By J. C. Neal.—Test of varieties of grasses. By A. C. Magruder.—Some analyses of cowpeas and prairie grass. By G. L. Holter. May, 1893.
7. Water analyses. By G. L. Holter. July, 1893.
8. Tests of varieties of wheat. By A. C. Magruder. Oct., 1893.
9. Tests of varieties of vegetables, 1893. By F. A. Waugh.—Annual report of receipts and expenditures of the Oklahoma Experiment Station for the year ending June 30, 1893. Jan., 1894.
10. Corn. By A. C. Magruder. Apr., 1894.
11. Press bulletin excerpts (from Press bulletins 1-15). July, 1894.
12. Wheat. By A. C. Magruder. Sept., 1894.
13. Wheat feeding. By J. C. Neal. Dec., 1894.
14. Grapes, 1894. By F. A. Waugh. Jan., 1895.
15. Garden vegetables, 1894. By F. A. Waugh. Feb., 1895.
16. Oats. By A. C. Margruder. Mar., 1895.
17. Oklahoma weeds. By J. C. Neal. Dec., 1895. See 41.
18. Irrigation for Oklahoma. By G. E. Morrow. Apr., 1896.
19. Methods of destroying chinch bugs. By G. F. Morrow. Apr., 1896.
20. Wheat experiments, 1895-96. By G. E. Morrow.—Food value of corn scorched by hot winds. By G. L. Holter.—Fruit culture in Oklahoma. By H. E. Glazier.—Peach rosette: the melon louse (*Aphis cucumeris*). By E. E. Bogue. June, 1896.
21. Experiments in corn culture, 1896. By G. E. Morrow and J. H. Bone.—Road making and repairing. By G. F. Morrow. Sept., 1896.
22. Climate and crops in Oklahoma: field experiments with kafir corn. By G. E. Morrow. Jan., 1897.
23. Cotton culture in Oklahoma. By G. E. Morrow. Feb., 1897.
24. Oklahoma soil studies. By J. H. Bone. May, 1897.
25. Loss by exposure of corn stover and teosinte; composition of pie melon; fertilizer analyses of castor bean plant. By G. L. Holter and John Fields. June, 1897.
26. Some injurious orchard insects. By E. E. Bogue. June, 1897.
27. Glanders: Texas fever; symptomatic anthrax. By L. L. Lewis. June, 1897.
28. Experiments with wheat, 1896-97. By G. E. Morrow and J. H. Bone. June, 1897.
29. A study of waters for irrigation: the irrigation plant. By G. L. Holter and John Fields. Sept., 1897.
30. Oklahoma weather and crops for 1897. By G. F. Morrow. Jan., 1898.
31. Strawberries; grapes; stimulating and holding fruit buds. By H. E. Glazier. Feb., 1898.
32. Practical chemistry of soils and crops: a study of the castor-oil plant. By G. L. Holter and John Fields. Mar., 1898.
33. Experiments with field crops, 1897. By G. E. Morrow and J. H. Bone. Mar., 1898.
34. The San José scale in Oklahoma. By E. E. Bogue. May, 1898.
35. Summary of digestion experiments with kafir. Nov., 1898. For full report see 37.
36. Summary of experiments with corn and wheat, 1898. Nov., 1898.
37. Digestion experiments and fodder analyses. By G. L. Holter and John Fields. Apr., 1899.
38. Analyses of waters for irrigation. By G. L. Holter and John Fields. Apr., 1899.
39. Texas fever. By L. L. Lewis. May, 1899.
40. Bacteriology of milk. By L. L. Lewis. May, 1899.
41. Weeds of Oklahoma. By F. E. Bogue. May, 1899. Supersedes 17.
42. Oklahoma soil studies. By J. H. Bone. June, 1899.
43. Fruits for Oklahoma. By O. M. Morris. Nov., 1899.
44. Field crops, 1899. By F. C. Burtis, G. E. Morrow, and J. H. Bone. Dec., 1899.
45. An annotated catalog of the ferns and flowering plants of Oklahoma. By E. E. Bogue. Mar., 1900. Also popular edition.
46. Digestion trials. By John Fields and A. G. Ford. May, 1900.
47. Reports of wheat raisers. By John Field.—Experiments with wheat. By F. C. Burtis and J. G. Kerr. Sept., 1900.
48. Crop and forage notes, 1900. By F. C. Burtis. Dec., 1900.
49. A rhizomorphic rot of fruit trees. By F. M. Wilcox. Feb., 1901. Also popular edition.
50. Manuring the soil. By John Fields. Apr., 1901.
51. Feeding cotton-seed meal to hogs. By F. C. Burtis and J. S. Malone. Dec., 1901.
52. The potato crop: variety tests of cabbage. By O. M. Morris. Dec., 1901.
53. Common parasites of domestic animals. By L. L. Lewis. June, 1902.
54. The improvement of the castor plant. By W. R. Shaw. June, 1902.
55. Bermuda grass. By John Fields. Dec., 1902.
56. Garden vegetables. By O. M. Morris. Dec., 1902.
57. Directions for using vaccine for the prevention of blackleg in cattle. By L. L. Lewis. Mar., 1903.
58. Fattening steers, using cotton seed, cottonseed meal, wheat meal, wheat straw, and hay. By F. C. Burtis and John Fields. June, 1903.
59. Reprints from Bulletins Nos. 47, 50, and 52, and annual reports 8 to 11 (for the use of settlers). Sept., 1903.
60. Planting trees for posts, fuel, and wind-breaks. By O. M. Morris. Dec., 1903.
61. Field experiments. By F. C. Burtis and L. A. Moorhouse. Jan., 1904.
62. Disinfecting power of coal-tar dips. By L. L. Lewis and J. F. Nicholson. May, 1904.
63. Tuberculosis in hogs. By L. L. Lewis. May, 1904.
64. Destroying insects and fungus diseases. By O. M. Morris. Jan., 1905.
65. Wheat growing. By F. C. Burtis and L. A. Moorhouse. June, 1905.
66. The water supply: Bacteriological examination of water from ponds, tanks, and cisterns. By John Fields. June, 1905.
67. Miscellaneous water analyses. By A. G. Ford. June, 1905.
68. Soil inoculation: Tubercle-forming bacteria of legumes. By L. L. Lewis and J. F. Nicholson. Dec., 1905. Also popular edition.

69. Small fruits. By O. M. Morris and J. F. Nicholson. Dec., 1905.
70. Hardy Bermuda grass. By John Fields. Apr., 1906.
71. Alfalfa. By F. C. Burtis and L. A. Moorhouse. June, 1906.
72. Tests of dips as lice killers. By L. L. Lewis. June, 1906.
73. Hardy trees, shrubs, and vines suitable for planting in Oklahoma. By O. M. Morris. Apr., 1907.
74. Cowpeas and soy beans. By L. A. Moorhouse. Apr. 1907.
75. A study of the bacterial content of cream. By L. L. Lewis and W. R. Wright. June, 1907.
76. Orchard spraying. By O. M. Morris and J. F. Nicholson. Feb., 1908.
77. Cotton culture. By L. A. Moorhouse and J. F. Nicholson. Mar., 1908.
78. Sheep feeding. By W. T. McDonald and J. S. Malone. Apr., 1908.
79. San José scale in Oklahoma. By J. F. Nicholson. Apr., 1908.
80. Rations for fattening hogs. By W. T. McDonald and J. S. Malone. May, 1908.
81. Texas fever. By L. L. Lewis. June, 1908.
82. Alfalfa in Oklahoma. By L. A. Moorhouse and W. L. Burlison. Jan., 1909.
83. Alfalfa seed in Oklahoma. By L. A. Moorhouse and W. L. Burlison. Feb., 1909.
84. Variety test of peaches. By O. M. Morris. June, 1909.
85. Bermuda grass. By L. A. Moorhouse, W. L. Burlison, and J. A. Ratcliff. June, 1909.
86. Tree culture. By O. M. Morris. Feb., 1910.
87. Indian corn culture. By L. A. Moorhouse, W. L. Burlison, and J. A. Ratcliff. Feb., 1910.
88. The southern plum aphis (*Aphis setariae* Thos.). By C. E. Sanborn. Mar., 1910.
89. The chemistry of the kafir corn kernel. By R. O. Baird. June, 1910.
90. A study of Bermuda grass: I, Cultivation and value; II, chemical composition; III, digestion experiments. By C. K. Francis and R. O. Baird. Nov., 1910.
91. The twig girdler (*Oncideres cingulata* and *texana*). By C. E. Sanborn. Mar., 1911.
92. Spray calendar. By A. L. Lovett. Apr. 1911.
93. Artificial insemination. By L. L. Lewis. May, 1911.
94. Hog feeding. By W. A. Linklater. July, 1912.
95. Varieties of fruits raised in Oklahoma. By N. O. Booth and D. C. Mooring. Nov., 1911.
96. The vitality of reproductive cells. By L. L. Lewis. Dec., 1911.
97. Cotton culture. By O. O. Churchill and A. H. Wright. Mar., 1912.
98. The cotton or melon aphis. By C. E. Sanborn. Aug., 1912.
99. Dairying in Oklahoma: Some results obtained in feeding dairy cows. By R. C. Potts.—Principles of feeding, feeding dairy cattle and experiments in milk production. By C. I. Bray.—Care and management of dairy cattle. By C. I. Bray. June, 1913.
100. Garden and truck crop insect pests. By C. E. Sanborn. Oct., 1912.
101. Silos in Oklahoma. By C. I. Bray and D. R. Forrester. July, 1914.
102. The grain sorghums. By O. O. Churchill and A. H. Wright. Oct., 1914.
103. Sudan grass. By R. E. Karper. Jan., 1915.
104. Hog cholera. By L. L. Lewis, W. P. Shuler, C. H. McElroy, and L. B. Ritter. Dec., 1914.
105. Cowpea culture. By O. O. Churchill. Nov., 1914.
106. Poultry: Breeds and breeding, poultry diseases, farm poultry housing. By A. F. Rolf. Incubation, brooding, and feeding. By L. F. Payne. Dec., 1914.
107. Using the Babcock test. By J. M. Fuller. June, 1915.
108. The production of first-grade cream. By R. C. Potts. Jan., 1916.
109. The alfalfa web worm. By C. E. Sanborn. Feb., 1916.
110. The starches of the grain sorghums: A technical bulletin. By C. K. Francis and O. C. Smith. Feb., 1916.
111. Sheep husbandry in Oklahoma. By W. L. Carlyle and D. A. Spencer. Oct., 1916.
112. A study of the effect of cottonseed meal vs. beef scrap upon the egg production, fertility, and vitality of poultry. By B. A. Ahrens. Jan., 1917.
113. The locust borer (*Cyllene robiniae* Forst.). By C. E. Sanborn and H. R. Painter. Mar., 1917.
114. The determination of fat in certain milk products. By C. K. Francis and D. G. Morgan. Apr., 1917.
115. Sudan grass silage. By C. K. Francis and W. G. Friedemann. Apr., 1917.
116. The sycamore lace bug (*Corythucha ciliata* Say). By Otis Wade. July, 1917.
117. The fats and fatty acids of the grain sorghums: A technical bulletin. By C. K. Francis and W. G. Friedemann. Oct., 1917.
118. The chicken tick (*Argas miniatus* Koch). By C. E. Sanborn and H. R. Painter. May, 1918.
119. Report of experiments on immunizing against hog cholera. By ~~S.~~ L. Lewis and C. H. McElroy. July, 1918.
120. A preliminary report on feeds fattening pigs comparing protein supplements for fattening pigs, and comparing corn, kafir, and darso as a fattening feed for pigs. By J. S. Malone. Oct., 1918.
121. Experiments with bolly refuse: The economic uses to which bolly refuse may be placed, and the composition of bolly, cotton seed and their products. By C. T. Dowell and W. G. Friedemann. Dec., 1918.
122. A study of the cyanogenesis in *Sorghum vulgare*. (Technical.) By C. T. Dowell. Mar., 1919.
123. The chicken sticktight flea (*Sarcopsylla gallinacea* Westw.). By C. E. Sanborn. Feb., 1919. See 130.
124. The effect of feeding peanuts on the quality of pork. By C. T. Dowell and W. G. Friedemann. May, 1919.
125. Comparative rations for wintering breeding ewes. By S. F. Russell. July, 1919.
126. Sheep-breeding experiment: Inheritance of characters in sheep. (Technical.) By S. F. Russell. July, 1919.
127. Darso. By M. A. Beeson and Adrian Daane. Sept., 1919.
128. The crow (*Corvus brachyrhynchos* Brehm). By C. E. Sanborn, R. O. Whittenton, and C. O. Chambers. Oct., 1919.
129. The four-spotted cowpea weevil (*Bruchus quadrimaculatus* Fabricius). By Otis Wade. Nov., 1919.
130. The chicken sticktight flea (*Sarcopsylla gallinacea* Westw.). By C. E. Sanborn. Feb., 1920. A revision of 123.
131. Bacterial blight of beans: A technical study. By C. W. Rapp. July, 1920.
132. The composition and digestibility of sudan grass hay, darso, darso silage, broom corn seed and sunflower silage. By C. T. Dowell and W. G. Friedemann. July, 1920.
133. Sheep feeding investigations: Comparative rations for fattening wether lambs. By W. T. Magee and A. E. Darlow. Sept., 1920.
134. Cattle feeding investigations. By W. L. Blizzard. Sept., 1920.

SPECIAL BULLETIN.

1. Texas cattle fever. By J. C. Neal and M. Francis. Oct., 1892.

OREGON.

Oregon Agricultural Experiment Station, Corvallis.

BULLETINS.

1. History and organization. By E. Grimm. Oct., 1888.
2. Horticultural: Preparation and notes on future work. By E. R. Lake. Jan., 1889.
3. Practical work with insecticides. By E. R. Lake.—Corn worm; insecticides; spraying machines; directions for sending insects. By F. L. Washburn.—Some investigations on plants poisonous to stock. By P. H. Irish. Oct., 1889.
4. Notes on farm crops. By E. Grimm.—Notes on vegetables; ornamental trees and shrubs; orchard and small fruits. By E. R. Lake.—Wheat, mineral waters, apparatus, soil analysis, etc. By P. H. Irish and W. D. Bigelow. Jan., 1890.
5. Entomology: Introductory; some injurious insects and remedies therefor; experiments with grain beetle. By F. L. Washburn.—Zoology: Gophers and rabbits. By F. L. Washburn.—Chemistry; fertilizers. By P. H. Irish and W. D. Bigelow. Apr., 1890.
6. Chemistry: Examination of cattle foods. By P. H. Irish.—Economic zoology: Circular No. 1, General information. By F. L. Washburn. July, 1890.
7. Comparative tests of small fruits and vegetables. First results. By George Coote. Oct., 1890.
8. Notes on varieties of wheat and flax. By H. T. French. Jan., 1891.
9. Silos and ensilage. By H. T. French. Feb., 1891.
10. Entomology: Practical work at station: Experiments with codling moth and with a combined fungicide and insecticide. By F. L. Washburn.—Hop louse, life history, prevention, remedies, etc. By F. L. Washburn. Apr., 1891.
11. Notes on grasses and potatoes. By H. T. French. May, 1891.
12. Comparative test of strawberries for 1891. By George Coote.—Meteorological summary. By John Fulton. May, 1891.
13. Mineral and mineral water analyses; soils and agricultural survey. By G. W. Shaw and Dumont Lotz. [May], 1891.
14. A plain talk about insects; some injurious insects of 1891; the grain beetle (*Silvanus surinamensis*); a sugar beet beetle (*Monoxia gutulata*); Tent caterpillars; the branch and twig burrower (*Polycaon confertus* Leconte). By F. L. Washburn. [May], 1891.
15. Horticulture. By George Coote. Jan., 1892.
16. Notes on varieties and yield of wheat. By H. T. French and C. D. Thompson. Feb., 1892.
17. Sugar beet. By G. W. Shaw and Dumont Lotz. Feb., 1892.
18. Insects injurious to young fruit trees; codling moth; kerosene emulsion wireworms: flea beetles. By F. L. Washburn. Mar., 1892.
19. Some Oregon weeds and how to destroy them. By Moses Craig. May, 1892.
20. Experiments in pig feeding. By H. T. French and C. D. Thompson. Sept., 1892.
21. The soils of Oregon. By G. W. Shaw and Dumont Lotz. Oct., 1892.
22. Comparative test of small fruits and notes; comparative test of vegetables with notes; renovations of old orchards. By George Coote.—Meteorological summary. By John Fulton. Jan., 1893.
23. Experiments in the culture of the sugar beet in Oregon. By G. W. Shaw. Feb., 1893. Superseded by Bul. 44.
24. Potatoes; roots. By H. T. French. Mar., 1893.
25. Codling moth and hop louse; gophers and moles. By F. L. Washburn. Apr., 1893.
26. Drainage. By J. M. Bloss. May, 1893.
27. Plant diseases: Their cause and prevention. By Moses Craig. Dec., 1893.
28. Continuation of experiments in pig feeding. By H. T. French. Jan., 1894.
29. Notes on vegetables, fruits, pruning, etc. By George Coote. Feb., 1894.
30. Potatoes; roots. By H. T. French. Mar., 1894.
31. Entomological department: Progress of work; codling moth, hop louse, flea-beetles, radish flies, cutworms and wireworms, tent caterpillars, illustrations of Oregon insects and insect work, gophers and moles; capons and caponizing. By F. L. Washburn. Apr., 1894.
32. Five farmers' foes: Canada thistle, sow thistle, bull thistle, Chinese thistle, Russian thistle. By Moses Craig. Nov., 1894.
33. Tent caterpillars; the grain plant louse (*Siphonophora avenae* Fab.); the pear leaf blister; the clover mite *Bryobia pratensis* Garman; Koebele's resin wash. By F. L. Washburn. Dec., 1894.
34. Fruits and vegetables: Notes on the comparative date of blooming and pollen production of varieties of apples, pears, plums, and cherries; notes on vegetables. By George Coote. Feb., 1895.
35. Forage plants; pig feeding. By H. T. French. Mar., 1895.
36. Composition and use of fertilizers. By G. W. Shaw. Apr., 1895.
37. Experiments in cattle feeding. By H. T. French. May, 1895.
38. Fruit pests. By F. L. Washburn. Sept., 1895.
39. A study in the economy of cattle foods. By G. W. Shaw. Dec., 1895.
40. Prunes, apples, and pears in Oregon. By U. P. Hedrick. Jan., 1896.
41. Spraying bulletin. By U. P. Hedrick and A. B. Cordley. Feb., 1896. See 108.
42. Feeding sheaf wheat; (a) pigs, (b) steers; feeding potatoes to pigs. By H. T. French. Mar. 1896.
43. Flax culture. By H. T. French. Feb., 1897.
44. A review of Oregon sugar beets. By G. W. Shaw and H. B. Miller. Mar. 1897. Superseded 23.
45. Prunes in Oregon: Is there permanent prosperity for the Oregon prune industry? By H. B. Miller.—Prune growing in Oregon. By U. P. Hedrick.—The fruit soils of Oregon: the composition of Oregon prunes. By G. W. Shaw.—Insects of the prune. By A. B. Cordley. June, 1897.
46. A plant that poisons cattle (*Cicuta vagans* Greene). By U. P. Hedrick. June, 1897.
47. The relative digestibility of cheat and clover. By G. W. Shaw and H. T. French. Sept., 1897.
48. Spraying. By A. B. Cordley. Jan., 1898. See. 108.
49. Paris green. By G. W. Shaw and J. F. Fulton. Jan., 1898.
50. The fertility of Oregon soils. By G. W. Shaw. Feb., 1898.
51. Marketing fruit. By Moses Craig. Mar., 1898.
52. The cultivation of the hazel nut; also notes on varieties of pears and peaches. By George Coote. Apr., 1898.
53. Sugar beets, 1897. By G. W. Shaw. Apr., 1898.
54. Notes on flax and hemp. By H. T. French.—Dairy rations. By F. L. Kent.—Fresh vs. stripper cow butter. By F. L. Kent.—Feeding pumpkins to pigs; feeding artichokes to pigs. By H. J. French. May, 1898.
55. Chemical studies of Oregon fruits: Cherries. By G. W. Shaw. Nov., 1898.
56. Chemical studies of Oregon fruits: Points on prune dipping. By G. W. Shaw. Mar., 1899.
57. Brown rot. By A. B. Cordley. Apr., 1899.
58. Rose culture in Oregon. By George Coote [and Mrs. H. B. Killin]. June, 1899.

59. Sugar-beet experiments of 1898 and final conclusions. By G. W. Shaw. Dec., 1899.
60. Apple-tree anthracnose, a new fungous disease. By A. B. Cordley. Jan., 1900.
61. The Oregon prune, its composition, food value, soil draught. By G. W. Shaw. Mar., 1900.
62. Miscellaneous investigations. By G. W. Shaw. June, 1900.
63. A preliminary bulletin on the prevention of smut on oats. By E. F. Pernot. Nov., 1900.
64. Investigations of diseases in poultry. By E. F. Pernot. Dec., 1900.
65. Creameries and cheese factories of western Oregon. By F. L. Kent. Jan., 1901.
66. The grape in Oregon: I, Western Oregon. By E. R. Lake. June, 1901.
67. The silo and silage. By James Withycombe. June, 1901.
68. Annotated list of the birds of Oregon. By A. R. Woodcock. Jan., 1901.
69. The codling moth and late spraying in Oregon. By A. B. Cordley.—Spraying. By E. L. Smith.—Method of spraying for the codling moth. By J. D. Olwell. Feb., 1902.
70. Testing milk and cream. By F. L. Kent. May, 1902.
71. Stagnant water germs in milk. By E. F. Pernot. June, 1902.
72. Preliminary report on steamed silage. By James Withycombe and A. L. Knisely. June, 1902.
73. Notes on vinegar making. By E. F. Pernot. Oct., 1902.
74. The cultivation of vegetables and notes on varieties. By George Coote. Feb., 1903. See also 77.
75. Insecticides and fungicides. By A. B. Cordley. Mar., 1903. Second edition, Feb., 1906. See 108.
76. Leguminous forage plants. By James Withycombe. June, 1903. Second edition, Feb., 1906.
77. A continuation of Bulletin 74 on onions; also notes on strawberries and varieties of vegetables. By George Coote. Dec., 1903.
78. Canning cheese. By E. F. Pernot. Mar., 1904.
79. Plant food and use of fertilizers. By A. L. Knisely. Mar., 1904.
80. Some results in swine feeding. By James Withycombe. Apr., 1904.
81. The apple in Oregon: I, Early history, earliest varieties later plantings, the problem of planting, site as to soil, site as to aspect, selection of trees, planting. By E. R. Lake. July, 1904.
82. The apple in Oregon: II, Varieties for home use, pollination, tillage, cover crops, pruning. By E. R. Lake. Nov., 1904.
83. The perpetuation of pure cultures for butter starters. By E. F. Pernot. Dec., 1904.
84. Poultry under confinement. By James Withycombe. Mar., 1905.
85. Digestibility of vetch hay and corn silage. By James Withycombe and A. L. Knisely. Mar., 1905.
86. Irrigation in Klamath County. By F. L. Kent. Apr., 1905.
87. Canning fruit and vegetables; preserving fruit juices. By E. F. Pernot. Jan., 1906.
88. San José scale. By A. B. Cordley. Mar., 1906.
89. Efficiency of cream separators under farm conditions. By I. P. Whitney. Dairy school cream separator tests. By F. L. Kent. June, 1906.
90. Acid soils. By A. L. Knisely. May, 1906.
91. Farm practice with forage crops in western Oregon and western Washington. By Byron Hunter. Nov., 1906.
92. The walnut in Oregon. By C. I. Lewis. Dec., 1906.
93. Orchard management. By C. I. Lewis and W. H. Wicks. Feb., 1907. See 111.
94. The apple from orchard to market. By C. I. Lewis.—[Hood River Apple Growers' Union. Instructions to packers; constitution, etc.] By E. H. Shepard. Feb., 1907.
95. Disease of turkeys (infectious entero-hepatitis). By E. F. Pernot. Jan., 1907.
96. The poultry industry in Oregon. By James Dryden. Dec., 1907.
97. Comments upon the State fertilizer law. By A. L. Knisely. Jan., 1908.
98. Preserving wild mushrooms. By E. F. Pernot. Jan., 1908.
99. Orchard survey of Wasco County. By C. I. Lewis and R. W. Allen. Mar., 1908.
100. Incubation experiments. By James Dryden. Aug., 1908.
101. Orchard survey of Jackson County. By C. J. Lewis, S. L. Bennett, and C. C. Vincent. Oct., 1908.
102. Digestibility of kale, vetch hay, steamed and unsteamed silage. By James Withycombe and C. E. Bradley. Nov., 1908.
103. An investigation of the mortality of incubator chicks. By E. F. Pernot. Dec., 1908.
104. Pollination of the apple. By C. I. Lewis and C. C. Vincent. Feb., 1909.
105. Culture of small fruits. By C. I. Lewis and C. A. Cole. Mar., 1909.
106. Spraying for peach fruit spot. By A. B. Cordley and C. C. Cote. Aug., 1909.
107. Commercial fertilizers and insecticides. By C. E. Bradley. Jan., 1910.
108. Insecticides and fungicides: Brief directions for their preparation and use. By A. B. Cordley. Apr., 1910. Supersedes 41, 48, and 75.
109. A preliminary report on the vegetable growing industry in Oregon. By A. G. B. Bouquet. Oct., 1910.
110. Preliminary frost fighting studies in the Rogue River Valley. By C. I. Lewis and F. R. Brown. Aug., 1911.
111. Orchard management. By C. I. Lewis. Sept., 1911. Supersedes 93.
112. The soils of Oregon. By C. E. Bradley. Jan., 1912.
113. Orchard irrigation studies in the Rogue River Valley. By C. I. Lewis, E. J. Kraus, and R. W. Rees. May, 1912.
114. Hop investigations. By H. V. Tartar and Bert Pilkington. Jan., 1913.
115. Biennial report, division of horticulture. First biennial report, substation Umatilla experiment farm, Hermiston, Oregon. By R. W. Allen.—Southern Oregon experiment station, Talent, Oregon. By F. C. Reimer. Nov., 1912.
116. A preliminary report on the pollination of the sweet cherry. By V. R. Gardner. Aug., 1913.
117. Loganberry by-products. By C. I. Lewis and F. R. Brown. Apr., 1914.
118. Ammonification and nitrification studies of certain types of Oregon soils. By T. D. Beckwith, A. F. Vass, and R. H. Robinson. June, 1914.
119. A report of the experimental and demonstration work on the substation farms at Moro, Burns, Redmond, and Metolius: I, Tillage and cropping methods. By H. D. Scudder. Jan., 1914.
120. Improving sandy soils by the use of green manure crops. By R. W. Allen and W. K. Dean. Aug., 1914.
121. The common red spider or spider mite. By H. E. Ewing. Aug., 1914.
122. Irrigation and soil-moisture investigations in western Oregon. By H. D. Scudder and W. L. Powers. Aug., 1914.
123. An inquiry into the nature of a somatic segregation of characters in the Le Conte pear. By W. P. Tufts. Dec., 1914.
124. Comparative cooking qualities of some of the common varieties of apples grown in Oregon. By Ava B. Milam and Harriet B. Gardner. Feb., 1915.
125. Windbreaks, hedges, and ornamentals for irrigated sandy soils of eastern Oregon. By R. W. Allen. Feb., 1915.
126. Grape culture, with special reference to commercial production under irrigation in eastern Oregon. By R. W. Allen. Feb., 1915.

127. Experiments in swine feeding. By James Withycombe, E. L. Potter, and G. R. Samson. Mar., 1915.
128. The arsenates of lead. By R. H. Robinson and H. V. Tartar. May, 1915.
129. The pollination of the pomaceous fruits: II, Fruit-bud development of the apple. By F. C. Bradford. May, 1915. For Pt. I see Research Bul. 1.
130. Pruning: Plant physiology as related to pruning. By W. M. Atwood.—The study of fruit buds. By E. J. Kraus.—Pruning young trees. By C. I. Lewis.—Pruning the bearing apple and pear tree. By V. R. Gardner.—Pruning the bearing prune trees. By V. R. Gardner. May, 1915.
131. The calcium arsenates. By R. H. Robinson. June, 1918.
132. Economics of apple orcharding. By C. I. Lewis and H. A. Vickers. June, 1915.
133. Points on the selection, adjustment, and care of farm machines. By E. M. D. Bracker. Aug., 1915.
134. A study of variation in apples during the growing season. By W. E. Whitehouse. June, 1916.
135. Variation of internal structure of apple varieties. By E. J. Kraus. June, 1916.
136. Vegetable tests on sandy soil at the Umatilla experiment farm. By R. W. Allen. Mar., 1916.
137. The drainage of "white land" and other wet lands in Oregon. By W. L. Powers.—Open ditches. By T. A. H. Teeter. July, 1916.
138. The pollination of the pomaceous fruits: III, Gross vascular anatomy of the apple. By E. J. Kraus and G. S. Ralston. May, 1916.
139. Pruning investigations: The early summer pruning of young apple trees. By V. R. Gardner.—The influence of summer pruning on bud development in the apple. By J. R. Magness.—A statistical study of the fruit-spur system of certain apple trees. By A. F. Yeager. Aug., 1916.
140. A preliminary report of cooperative irrigation investigations in Oregon on the economical use of irrigation water. By W. L. Powers.—Relation of proper irrigation to bacterial count. By T. D. Beckwith. Jan., 1917.
141. Report of the Hood River branch experiment station for 1916. Feb., 1917.
142. The culture of small fruits on irrigated sandy land. By R. W. Allen. Mar., 1917.
143. New facts regarding the period of ascopore discharge of the apple scab fungus. By Leroy Childs. May, 1917.
144. Dry farming investigations at the Sherman County branch experiment station. By D. E. Stephens and C. E. Hill. Apr., 1917.
145. The evaporation of prunes. By C. I. Lewis, F. R. Brown, and A. F. Barss. July, 1917.
146. Pruning investigations, second report: Studies in fruit-bud formation. By J. R. Magness.—The relation between angle, length, and diameter of shoots and the development of side shoots and fruit spurs from lateral buds. By A. F. Edminster.—The influence of bending dormant shoots upon their subsequent behavior; the winter heading back and thinning out of apple shoots in young trees. By V. R. Gardner. Oct., 1917.
147. Bark beetles infesting the Douglas fir. By W. J. Chamberlin. Jan., 1918.
148. The life history and control of the rose leaf hopper (*Empoa rosae*): An apple pest. By Leroy Childs. Feb., 1918.
149. Vegetation and reproduction with special reference to the tomato (*Lycopersicum esculentum* Mill.). By E. J. Kraus and H. R. Kraybill. Jan., 1918.
150. Dry farming investigations at the Harney branch station, Burns, Oregon. By L. R. Breithaupt. Feb., 1918.
151. A chemical examination of the loganberry. By M. R. Daughters. Apr., 1918.
152. The western newt or water dog (*Notophthalmus torosus*): A natural enemy of mosquitoes. By A. C. Chandler. June, 1918.
153. The life history and control of the pocket gopher in the Willamette Valley. By H. M. Wight. June, 1918.
154. Preliminary report of pear harvesting and storage investigations in Rogue River Valley. By C. I. Lewis, J. R. Magness, and C. C. Cate. June, 1918.
155. The use of pepsin as a rennet substitute in cheddar cheesemaking. By P. S. Lucas. June, 1918.
156. The part of milk contests in improving the milk supply of Portland, Oregon. By E. C. Callaway and P. S. Lucas. Dec., 1918.
157. Preliminary report on the improvement of marsh lands in western Oregon. By W. L. Powers. Jan., 1919.
158. Pollination of tomatoes. By A. G. B. Bouquet. Mar., 1919.
159. Fertilizer tests for strawberries: Summary of results of experiments extending over three years on red-shot Parkdale loam. By G. G. Brown. Mar., 1919.
160. The small irrigation pumping plant. By W. L. Powers and W. J. Gilmore. July, 1919.
161. Duty of water in irrigation. By W. L. Powers. Jan., 1920.
162. Pear harvesting and storage investigations in the Rogue River Valley (second report). By C. I. Lewis, A. E. Murneck, and C. C. Cate. July, 1919.
163. Sulfur as a fertilizer for alfalfa in southern Oregon. By R. C. Reimer and H. V. Tartar. July, 1919.
164. The soils of Jackson County. By H. V. Tartar and F. C. Reimer. Jan., 1920.
165. Finishing pigs for market. By E. J. Fjeldsted and E. L. Potter. Oct., 1919.
166. Fertilizers for Oregon orchards: Introduction. By C. I. Lewis.—Nitrogen fertilizers for fruit trees in the Rogue River Valley. By F. C. Reimer.—Recent experiments with nitrate of soda in bearing orchards in Hood River Valley. By G. G. Brown. Feb., 1920.
167. The improvement and irrigation requirement of wild meadow and tule land. By W. L. Powers and W. W. Johnston. Jan., 1920.
168. Survey of typical Oregon farmers' creameries. By Eric Englund. Feb., 1920.
169. Insecticide investigations. By A. L. Lovett. Apr., 1920.
170. The gray garden slug (*Agriolimax agrestis* Linn.), with notes on allied forms. By A. L. Lovett and A. B. Black. June, 1920.
171. Spray gun versus rod and dust in apple orchard pest control. By Leroy Childs. July, 1920.
172. The western pine bark-beetle (*Dendroctonus brevicomis* Lec.), a serious pest of western yellow pine in Oregon. By W. J. Chamberlin. June, 1920.
173. Irrigation of potatoes. By W. L. Powers and W. W. Johnston. Aug., 1920.
174. Fattening steers. By E. L. Potter and Robert Withycombe. Aug., 1920.
175. Fattening lambs: Shelter versus open lot. By Robert Withycombe and E. L. Potter. Sept., 1920.

RESEARCH BULLETINS.

1. The pollination of the pomaceous fruits: I. Gross morphology of the apple. By E. J. Kraus. Apr., 1913. See also Buls. 129 and 138.
2. An investigation of lime-sulfur injury; its causes and prevention. By V. I. Safre. July, 1913.
3. A report of chemical investigations on the lime-sulfur spray. By H. V. Tartar. Mar., 1914

NOTE.—Series discontinued with No. 3.

PENNSYLVANIA.

The Pennsylvania State College Agricultural Experiment Station, State College.

BULLETINS.

The present series of bulletins was the immediate successor to Bulletins 1–16, 1882–1886, issued by the Pennsylvania State College.

1. Historical sketch of the agricultural experiments conducted by the Pennsylvania State College, 1857–1887; studies upon the composition and development of soiling crops. By William Frear.—Instructions for taking and sending samples. By H. P. Armsby. Oct., 1887.
2. Field experiments with phosphates. By H. P. Armsby. Jan., 1888.
3. Composition and digestibility of corn stover. By H. P. Armsby. Apr., 1888.
4. Seed germinations. By G. C. Butz. July, 1888.
5. The digestibility of soiling rye. By William Frear. Oct., 1888.
6. Tests of varieties, 1888: Wheat, oats, barley, potatoes, forage crops. By W. H. Caldwell. Jan., 1889.
7. Tests of varieties, 1888: Corn. By W. H. Caldwell.—Remarks on the foregoing experiments. [By H. P. Armsby.]—Analyses and valuation of fertilizers. By William Frear. Apr., 1889.
8. Systematic testing of new varieties; germination tests. By G. C. Butz. July, 1889.
9. Digestibility of corn fodder and silage. By H. P. Armsby and W. H. Caldwell. Oct., 1889.
10. Should farmers raise their own vegetable seeds. Notes on new varieties of vegetables. By G. C. Butz.—Tests of agricultural varieties. 1889. By W. H. Caldwell. Jan., 1890.
11. Indian corn as a grain and forage crop. By W. H. Caldwell. Apr., 1890.
12. Simple methods of determining milk fat. By William Frear and G. L. Holter.—Dried brewers' grains. By William Frear. July, 1890.
13. Black knot on plums; a few ornamental plants. By G. C. Butz. Oct., 1890.
14. Tests and varieties of vegetables for 1890. By G. C. Butz. Jan., 1891.
15. Influence of variety and of rate of seeding on the yield of ensilage corn. By H. P. Armsby. Apr., 1891.
16. Culture of the chestnut for fruit. By W. A. Buckhout.—Analysis of several varieties of chestnuts. By William Frear. July, 1891.
17. The value of cotton-seed meal as compared with bran for the production of butter. By T. F. Hunt. Oct., 1891.
18. Notes on new and old varieties of orchard fruits and small fruits. By G. C. Butz. Jan., 1892.
19. Information on spraying fruits. By G. C. Butz. Apr., 1892.
20. Tests of dairy apparatus. By H. P. Armsby, H. J. Waters, and W. H. Caldwell. July, 1892.
21. The Koch test for tuberculosis. By H. P. Armsby. Oct., 1892.
22. Tests of dairy apparatus. By W. H. Caldwell. Jan., 1893.
23. Forest fires. By W. A. Buckhout.—Experience with evergreens in Pennsylvania. By G. C. Butz. Apr., 1893.
24. Influence of quality of food upon economy of milk and butter production. By H. J. Waters, W. H. Caldwell, and R. J. Weld. July, 1893.
25. Small fruits in 1893. By G. C. Butz. Oct., 1893.
26. Mangels and sugar beets versus silage: Yield, cost, and feeding value. By H. J. Waters and R. J. Weld. Jan., 1894.
27. Tests of cream separators. By H. P. Armsby, W. H. Caldwell, and L. E. Reber. Apr., 1894.
28. Cottonseed feed for dairy cows. By H. P. Armsby and E. H. Hess. July, 1894.
29. Tuberculosis of cattle. By Leonard Pearson. Oct., 1894.
30. Tobacco experiments. By William Frear and E. J. Haley. Jan., 1895.
31. Report of the director for 1894. By H. P. Armsby. Apr., 1895.
32. Small fruits in 1894. By G. C. Butz. July, 1895.
33. Directions for using the Babcock milk test. By Harry Hayward and M. E. McDonnell. Oct., 1895.
34. A phosphate deposit in Juniata County. By M. C. Ihlseng. Jan., 1896.
35. A soil test with fertilizers. By H. P. Armsby. Apr., 1896.
36. Chestnut culture for fruit. By W. A. Buckhout. May, 1896.
37. The peach industry in Pennsylvania. By G. C. Butz. Nov., 1896.
38. A test of hand separators. By Harry Hayward. Jan., 1897.
39. Variety tests of wheat, oats, and potatoes. By G. C. Watson and E. H. Hess. Nov., 1897.
40. The sugar beet in Pennsylvania. By H. P. Armsby. Dec., 1897.
41. The comparative value of buckwheat, middlings, dried brewers' grains, and cerealine for milk and butter production. By Harry Hayward and R. J. Weld. Dec., 1897.
42. The maintenance ration of cattle. By H. P. Armsby. May, 1898. See 111.
43. Apples in Pennsylvania. By G. C. Butz. July, 1898. See 106 and 128.
44. Commercial butter cultures. By Harry Hayward and M. E. McDonnell. Nov., 1898.
45. Heated milk for butter making. By Harry Hayward and F. F. Pepper. Dec., 1898.
46. Variety tests of wheat. By G. C. Watson and E. H. Hess. July, 1899.
47. Tests of the sugar beet in Pennsylvania. By H. P. Armsby and E. H. Hess. Nov., 1899.
48. Winter versus spring bran. By William Frear and W. A. Hutchinson. Dec., 1899.
49. Field fertilizer experiments on tobacco. By William Frear. Feb., 1900.
50. Distillery waste. By William Frear and C. A. Browne, jr.—Miscellaneous cattle food analyses. By William Frear. Feb., 1900.
51. Small fruits in 1899. By G. C. Butz and J. P. Pillsbury. Apr., 1900.
52. Rye meal and Quaker Oats feed for milk production. Condensed by E. H. Hess from account by Harry Hayward in annual report Pennsylvania State College. 1898–99. [p. 124–141.] June, 1900.
53. Methods of steer feeding. By G. C. Watson and M. S. McDowell. Sept., 1900.
54. The manurial value of the excreta of milch cows. By W. S. Sweetser. Nov., 1900.
55. Variety tests of wheat. By G. C. Watson and E. H. Hess. May, 1901.
56. Methods of dairy feeding. By Harry Hayward. July 1901.
57. Methods of steer feeding. By G. C. Watson and A. K. Risser. Nov., 1901.
58. Weeds in general; two newcomers into Pennsylvania. By W. A. Buckhout. Mar., 1902.
59. Pennsylvania sugar beets in 1901. By William Frear and W. T. Carter. Apr., 1902.
60. The rearing of calves on milk substitutes. By Harry Hayward. July 1902.
61. Annual report of the director. By H. P. Armsby. Oct., 1902.
62. An experiment in ginseng culture. By G. C. Butz. Jan., 1903.
63. Losses in manure. By William Frear. Apr., 1903.
64. Methods of steer feeding: Barn vs. shed. By T. I. Mairs and A. K. Risser. Oct., 1903.
65. Forage and soiling experiments, 1902. By G. C. Watson and T. I. Mairs. Dec., 1903.
66. Spraying grapes for black rot in Erie County, Pa. By G. C. Butz. Jan., 1904.
67. Variety tests of wheat. By G. C. Watson and A. K. Risser. Apr., 1904.

68. Methods of steer feeding: Barn versus shed—second trial. By T. I. Mairs and A. K. Risser. July, 1904.
69. Annual report of the director. Oct., 1904.
70. Condimental, tonic, and other stock foods. By William Frear. Jan., 1905.
71. Relative values of feeding stuffs. By H. P. Armsby. May, 1905. Revised edition, May, 1907.
72. Experiments in growing Sumatra tobacco under shelter tent, 1903. By William Frear. July, 1905.
73. Distillers' dried grains versus cottonseed meal as a source of protein. By H. P. Armsby and A. K. Risser. Sept., 1905.
74. Methods of steer feeding: Barn versus shed—third trial. By T. I. Mairs and N. G. Miller. Oct., 1905.
75. Forage and soiling experiments, 1904. By G. C. Watson and T. I. Mairs. Dec., 1905.
76. Variety tests of wheat, oats, and potatoes. By G. C. Watson and N. G. Miller. Feb., 1906.
77. Small fruits in 1905. By J. P. Pillsbury. Mar., 1906.
78. A test of commercial cultures for legumes. By G. C. Butz. July, 1906.
79. Alfalfa as a forage crop for Pennsylvania. By G. C. Watson. Sept., 1906.
80. A comparison of alfalfa meal and wheat bran for dairy cows. By T. I. Mairs. Oct., 1906.
81. Commercial feeding stuffs. By T. I. Mairs. Nov., 1906.
82. Winter wheat varieties. By J. H. Barron. Aug., 1907.
83. Methods of steer feeding: Stover versus silage; barn versus shed, cottonseed meal versus Ajax Flakes. By T. I. Mairs. Oct., 1907.
84. Feed as a source of energy. By H. P. Armsby. Dec., 1907.
85. Test of a mechanical cow milker. By T. I. Mairs. Jan., 1908.
86. Miscible oils: How to make them. By C. L. Penny. Mar., 1908.
87. Some poultry experiments. By T. I. Mairs. Aug., 1908.
88. Steer feeding experiments. By T. I. Mairs and W. H. Tomhave. Nov., 1908.
89. Shelter test experiment with Sumatra-type tobacco. By William Frear. Jan., 1909.
90. Soil fertility. By T. F. Hunt. Mar., 1909.
91. Orchard fertilization. By J. P. Stewart. Apr., 1909.
92. Concentrated lime-sulphur: Its properties, preparation, and use. By J. P. Stewart. July, 1909. See 99.
93. A study of Pennsylvania butter. By H. E. Van Norman and C. W. Larson. Aug., 1909.
94. Variety tests of wheat. By C. F. Noll. Aug., 1909.
95. Experiments in pig feeding: White middlings versus corn chop and tankage. By T. I. Mairs and S. W. Doty. Dec., 1909. Also revised edition.
96. A strain test of Jersey Wakefield cabbage. By C. E. Myers. Feb., 1910.
97. Milling and baking tests. By F. D. Gardner. Mar., 1910.
98. A variety test of potatoes. By C. P. Noll. Mar., 1910.
99. Preparation and use of concentrated lime-sulphur. By J. P. Stewart. May, 1910. Includes revision of parts of 92. See 115.
100. The fertilization of apple orchards. By J. P. Stewart. June, 1910. See 121.
101. Meadows and pastures. By T. F. Hunt. July, 1910.
102. Methods of fattening steers. By W. A. Cochel and S. W. Doty. Sept., 1910.
103. The lighting of farm houses. By I. T. Osmond. Sept., 1910.
104. The respiration calorimeter at the Institute of Animal Nutrition of the Pennsylvania State College. By H. P. Armsby. Oct., 1910.
105. Influence of type and of age upon the utilization of feed by cattle. By H. P. Armsby and J. A. Fries. Nov., 1910.
106. The apple in Pennsylvania: Varieties, planting, and general care. By J. P. Stewart. Dec., 1910. A revision of 43; see also 128.
107. Poultry experiments and management. By T. I. Mairs and H. W. Jackson. Dec. 1910.
108. Variety tests of oats. By F. D. Gardner and J. A. Runk. Feb., 1911.
109. Some soiling crops for Pennsylvania. By T. I. Mairs. Feb., 1911.
110. The control of insects and diseases affecting horticultural crops. By H. R. Fulton, W. J. Wright, and J. W. Gregg. Apr., 1911.
111. The maintenance ration of cattle. By H. P. Armsby. Aug., 1911.
112. Beef production in Pennsylvania. By W. A. Cochel. Nov., 1911.
113. Work of the agricultural experiment station for 1910–11. By W. Frear. Feb., 1912.
114. A short method of computing dairy rations according to the net energy standards. By H. E. Van Norman. Mar., 1912.
115. Preparation and use of the concentrated lime-sulphur spray. By J. F. Stewart. Mar., 1912. Supersedes 99.
116. Corn growing in the East. By T. F. Hunt. Apr., 1912.
117. Feeding draft horses. By W. A. Cochel. Aug., 1912.
118. Silage for steers; wintering beef-breeding cows. By W. A. Cochel. Oct., 1912.
119. Strain tests of cabbage. By C. E. Myers. Dec., 1912.
120. Poultry experiments: Experiments in incubation. By H. W. Jackson.—Crude fiber in the ration of laying hens. By W. A. Cochel and H. W. Jackson.—A comparison of simple rations with variety in feeding laying hens. By W. A. Cochel and H. W. Jackson. Dec., 1912.
121. The fertilization of apple orchards. By J. P. Stewart. Apr., 1912. Supersedes 100.
122. Developing draft colts. By W. A. Cochel and B. O. Severson. July, 1913.
123. The history of tuberculosis in the college herd. By H. H. Havner. Aug., 1913.
124. Steer feeding experiments. By W. H. Tomhave and B. O. Severson. Sept., 1913.
125. Variety tests of wheat. By C. F. Noll. Oct., 1913.
126. Food as body fuel. By H. P. Armsby. Nov., 1913.
127. Pennsylvania limestone and lime supplies. By William Frear. Dec., 1912.
128. The apple in Pennsylvania: Varieties, planting, and general care. By J. P. Stewart. Feb., 1914. A revision of 106.
129. Strain tests of tomatoes. By C. E. Myers. Mar., 1914.
130. Tobacco seed-beds. By Otto Olson. Apr., 1914.
131. The use of lime on land. By F. D. Gardner. Sept., 1914.
132. The soils of Pennsylvania. By C. F. Shaw. Oct., 1914.
133. Steer-feed experiments. By W. H. Tomhave and C. W. Hickman. Nov., 1914.
134. Experimental results in young orchards in Pennsylvania. By J. F. Stewart. Apr., 1915.
135. A study of the manufacture of dairy butter; methods of making farm butter. By E. L. Anthony. July, 1915.
136. Collar blight and related forms of fire blight. By C. R. Orton and J. F. Adams. Aug., 1915.
137. Experiments with cabbage. By C. E. Myers. Jan., 1916.
138. Raising beef cattle. By B. O. Severson. Mar., 1916.
139. Experiments with corn. By C. F. Noll. Apr., 1916.
140. Potato diseases. By C. R. Orton. May, 1916.

141. Cultural methods in bearing orchards. By J. P. Stewart. June, 1916.
142. Net energy values for ruminants. By H. P. Armsby and J. A. Fries.—Net energy values of American feeding stuffs. By H. P. Armsby and F. S. Putney. July, 1918.
143. Computation of dairy rations. By F. S. Putney and H. P. Armsby. Aug., 1916. Based on 114 and 142. See 161.
144. The maintenance of breeding ewes of mutton and wool sheep. By B. O. Severson. Oct., 1916.
145. Steer feeding experiments. By W. H. Tomhave, B. O. Severson, and Paul Gerlaugh. Apr., 1917.
146. Thirty-five years' results with fertilizers. By F. D. Gardner, C. F. Noll, and P. S. Baker. May, 1917.
147. Miscellaneous experiments, from the director's report, 1916–17. July, 1917.
148. Wheat. By C. F. Noll. Aug., 1917.
149. The relative value of limestone of different degrees of fineness for soil improvement. By J. W. White. Oct., 1917. See 152.
150. Raising beef cattle. By B. O. Severson. Jan., 1918.
151. Fertilizer experiments on DeKalb soils: A preliminary report. By J. W. White. Feb., 1918.
152. The relative value of limestone of different degrees of fineness for soil improvement. By J. W. White and F. D. Gardner. Mar., 1918. A popular edition of 149.
153. The fertilization of apple orchards. By J. P. Stewart. May, 1918.
154. A variety test of cabbage. By C. E. Myers and J. S. Gardner. Jan., 1919.
155. Fertilizer experiments on DeKalb soil: Yields of clover, corn, and Kentucky blue grass. By J. W. White. Feb., 1919.
156. The potato wart disease: A new and serious disease recently discovered in Pennsylvania. By C. R. Orton and F. D. Kern. Mar., 1919.
157. Cost of burning lime in the stack or heap. By William Frear and C. L. Goodling.—Supplementary report upon the limestone resources of Pennsylvania. By William Frear and C. A. Kern. Apr., 1919.
158. An economic study of the gas tractor in Pennsylvania. By D. S. Fox. May, 1919.
159. Dairy farming in southeastern Pennsylvania. By G. A. Billings. Sept., 1919.
160. Rusts on conifers in Pennsylvania. By J. F. Adams.—Sexual fusions and development of the sexual organs in the Peridermiums. By J. F. Adams. Dec., 1919.
161. Computation of dairy rations. [Revised by A. A. Borland from Bul. 143 by F. S. Putney and A. P. Armsby.] Mar., 1920.
162. The control of frog eye on apple. By R. C. Walton. May, 1920.
163. Cross breeding Delaine merino ewes with pure-bred mutton rams. By W. H. Tomhave and C. W. McDonald. May, 1920.
164. Lime requirement of Pennsylvania soils. (Summary of a lime requirement survey of Pennsylvania.) By J. W. White. July, 1920.

BULLETINS OF INFORMATION.

1. The computation of rations for farm animals. By H. P. Armsby. Second edition, Dec., 1896.
2. Composition of full cream cheese. By William Frear. Sept., 1897.
3. Spray calendar. By G. C. Butz. Apr., 1902.

PORTO RICO.

Porto Rico Agricultural Experiment Station, Mayaguez.

BULLETINS.

1. The agricultural experiment station of Porto Rico, its establishment, location, and purpose. By F. D. Gardner. Sept., 1902. Also Spanish edition.
2. The changa, or mole cricket (*Scapteriscus didactylus* Latr.) in Porto Rico. By O. W. Barrett. Sept., 1902. Also Spanish edition.
3. Soil survey from Arecibo to Ponce, Porto Rico. By C. W. Dorsey, L. Mesmer, and T. A. Caine. Sept., 1903. Also Spanish edition.
4. Propagation and marketing of oranges in Porto Rico. By H. C. Henricksen. May, 1904. Also Spanish edition.
5. Tobacco investigations in Porto Rico during 1903–4. By J. Van Leenhoff, jr. Dec., 1904. Also Spanish edition.
6. The yautias, or taniers of Porto Rico. By O. W. Barrett. Apr., 1905. Also Spanish edition.
7. Vegetable growing in Porto Rico. By H. C. Henricksen. Feb., 1906. Also Spanish edition.
8. Pine-apple growing in Porto Rico. By H. C. Henricksen and M. J. Iorns. Jan., 1909. (Issued Apr., 1909.) Also Spanish edition.
9. Sugar cane in Porto Rico. By D. W. May. Apr., 1910. Also Spanish edition.
10. Insects injurious to citrus fruits and methods for combating them. By W. V. Tower. Jan., 1911. Also Spanish edition.
11. Relation of calcareous soils to pineapple chlorosis. By P. L. Gile. May, 1911. Also Spanish edition.
12. Lime-magnesia ratio as influenced by concentration. By P. L. Gile. Sept., 1912.
13. Studies on acid soils of Porto Rico. By Oscar Loew. Oct., 1913.
14. The red clay soil of Porto Rico. By P. L. Gile and C. N. Ageton. Mar., 1914.
15. Porto Rican beekeeping. By E. F. Phillips. May, 1914. Also Spanish edition.
16. The effect of strongly calcareous soils on the growth and ash composition of certain plants. By P. L. Gile and C. N. Ageton. Sept., 1914.
17. Fungus diseases of coffee in Porto Rico. By G. L. Fawcett. Feb., 1915. Also Spanish edition.
18. Citrus fertilization experiments in Porto Rico. By C. F. Kinman. May, 1915. Also Spanish edition.
19. Cover crops for Porto Rico. By C. F. Kinman. Jan., 1916. Also Spanish edition.
20. Experiments on the supposed deterioration of varieties of vegetables in Porto Rico, with suggestions for seed preservation. By C. F. Kinman and T. B. McClelland. Nov., 1916. Also Spanish edition.
21. Some profitable and unprofitable coffee lands. By T. B. McClelland. Mar., 1917. Also Spanish edition.
22. Effect of different methods of transplanting coffee. By T. B. McClelland. June, 1917. Also Spanish edition.
23. The changa or West Indian mole cricket. By R. H. Van Zwaluwenburg. Feb., 1918.
24. The mango in Porto Rico. By C. F. Kinman. Feb., 1918.
25. The bat guanos of Porto Rico and their fertilizing value. By P. L. Gile and J. O. Carrero. July, 1918.
26. Vanilla: A promising new crop for Porto Rico. By T. B. McClelland. Apr., 1919.

RHODE ISLAND.

Rhode Island Agricultural Experiment Station, Kingston.

BULLETINS.

1. Organization. By C. O. Flagg. Mar., 1889.
2. The farm: Historical, physical, and geological description. By C. O. Flagg and E. F. Clark. June, 1889.
3. Stock feeding. By H. J. Wheeler. Sept., 1889.
4. Bee keeping; Establishment of the apiary. By Samuel Cushman. Dec., 1889.
5. Potatoes: Methods of planting and test of varieties; meteorological summary. By L. F. Kinney. Dec., 1889.
6. Milk fever, or parturient apoplexy, in cows. By F. E. Rice. Mar., 1890.
7. Catalogue of fruits; meteorological summary. By L. F. Kinney. Report of the apiarist. By Samuel Cushman. June, 1890.
8. Soils and fertilizers. By H. J. Wheeler. Sept., 1890.
9. Experiments in apiculture; foul brood. By Samuel Cushman. Dec., 1890.
10. Mixed foods in cases of faulty appetite in horses and neat stock, including notice of patented and proprietary foods; sore shoulders in horses. By F. E. Rice. May, 1891.
11. The State fertilizer law as it is and as it might be; commercial value of fertilizer stock; analyses of commercial fertilizers; State inspection, 1891; analyses of miscellaneous materials sent on for examination; meteorological summary. By H. J. Wheeler. June, 1891.
12. Further analyses of commercial fertilizers collected under the State inspection, 1891, with comments. By H. J. Wheeler and B. L. Hartwell. Aug., 1891.
13. Concluded list of fertilizer analyses, State inspection 1891; analyses of miscellaneous materials. By H. J. Wheeler and B. L. Hartwell. Sept., 1891.
14. Notes on the potato scab; notes on the Bordeaux mixture as a preventive of potato scab; notes on the Bordeaux mixture as a preventive of the potato blight; notes on transplanting onions. By L. F. Kinney. Oct., 1891.
15. Treatment of loose smut of oats. By C. O. Flagg.—Fungicides and insecticides and apparatus for applying them; black rot of the grape and apple scab; codling moth, canker worm, and plum curculio. By L. F. Kinney. Apr., 1892.
16. The new fertilizer law for Rhode Island; selling price of fertilizer stock; analyses of commercial fertilizers, State inspection, 1892; miscellaneous analyses. By H. J. Wheeler and B. L. Hartwell. May, 1892.
17. Analyses of commercial fertilizers, State inspection, 1892. By H. J. Wheeler and B. L. Hartwell. June, 1892.
18. Analyses of commercial fertilizers; State inspection, 1892; a word of caution in the purchase of wood ashes. By H. J. Wheeler and B. L. Hartwell. Aug., 1892.
19. Concluded list of fertilizer analyses, State inspection, 1892, with summaries and comments. By H. J. Wheeler and B. L. Hartwell. Sept., 1892.
20. The production of capons. By Samuel Cushman. Dec., 1892.
21. Seaweeds: Their agricultural value; the chemical composition of certain species. By H. J. Wheeler and B. L. Hartwell. Jan., 1893.
22. Strawberries. By L. F. Kinney. Feb., 1893.
23. Fertilizers: Commercial and miscellaneous. By H. J. Wheeler and B. L. Hartwell. July, 1893.
24. Fertilizers: Analyses of commercial. By H. J. Wheeler and B. L. Hartwell. Aug., 1893.
25. Turkeys. By Samuel Cushman. Sept., 1893.
26. Fertilizers. By H. J. Wheeler and B. L. Hartwell.—Oats. By C. O. Flagg and J. D. Towar.—Potato scab. By H. J. Wheeler and J. D. Towar. Nov., 1893.
27. Leaf blight of the pear; raspberries; distribution of plants. By L. F. Kinney. Mar., 1894.
28. Rhode Island soils; fertilizers. By H. J. Wheeler and B. L. Hartwell. July, 1894.
29. Fertilizers: Commercial and special formula. By H. J. Wheeler and B. L. Hartwell. Oct., 1894.
30. Fertilizers. By H. J. Wheeler and B. L. Hartwell.—Potato scab. By H. J. Wheeler, J. D. Towar, and G. M. Tucker. Nov., 1894.
31. Some special orchard treatment of the apple, pear, and quince. By L. F. Kinney. Apr., 1895.
32. Analyses of commercial fertilizers. By H. J. Wheeler, B. L. Hartwell, and C. L. Sargent. June, 1895.
33. Fertilizers. By H. J. Wheeler, B. L. Hartwell, and C. L. Sargent.—Potatoes. By H. J. Wheeler, J. D. Towar, and G. M. Tucker.—Potato scab. By H. J. Wheeler and G. M. Tucker. Oct., 1895.
34. Analyses of fertilizers. By H. J. Wheeler, B. L. Hartwell, and C. L. Sargent.—Home-mixed fertilizers. By H. J. Wheeler and B. L. Hartwell. Dec., 1895.
35. Garden seeds. By L. F. Kinney and G. E. Adams. Jan., 1896.
36. Potato culture; hastening maturity. By C. O. Flagg, J. D. Towar, and G. M. Tucker. Jan., 1896.
37. Apple culture. By L. F. Kinney. May, 1896.
38. The Bordeaux mixture: Its use in the potato field. By L. F. Kinney. June, 1896.
39. Analyses of commercial fertilizers. By H. J. Wheeler, B. L. Hartwell, and C. L. Sargent. July, 1896.
40. Fertilizers. By H. J. Wheeler, B. L. Hartwell, and C. L. Sargent.—Potato scab. By H. J. Wheeler and G. M. Tucker. Oct., 1896.
41. Spinach. By L. F. Kinney. Nov., 1896.
42. Fertilizers. By H. J. Wheeler, B. L. Hartwell, and C. L. Sargent. Dec., 1896.
43. Additional tests of garden seeds. By L. F. Kinney and G. E. Adams. Jan., 1897.
44. Celery. By L. F. Kinney. Mar., 1897.
45. The loganberry from seed to fruitage. By L. F. Kinney. Apr., 1897.
46. Lime and liming. By H. J. Wheeler. Aug., 1897.
47. Lime, nitrogen, and soda. Notes on the use of lime, the relative crop-producing power of different forms of nitrogen on acid soils and on soda as a substitute for potash. By H. J. Wheeler. July, 1898.
48. Analyses of commercial fertilizers. By H. J. Wheeler and B. L. Hartwell. July, 1898.
49. Liming in Rhode Island; legumes: Is a lack of lime general in Rhode Island soils? By H. J. Wheeler and G. E. Adams.—Comparative trials of lime, worked into the soil before seeding and applied as a top dressing afterwards; an observation upon the after effect upon the growth of barley, of the roots of the flat pea (*Lathyrus sylvestris*). By H. J. Wheeler and J. A. Tillinghast. Nov., 1898.
50. The utilization of waste products and waste places: I, The nitrogen problem. By G. W. Field. Dec., 1898.
51. The utilization of waste products and waste places: II, The clam; the cultivation of tidal mud flats. By G. W. Field. Dec., 1898.
52. Suggestions as to spraying. By J. A. Tillinghast and G. E. Adams. Feb., 1899.
53. The practical bearing of some of the field and pot experiments conducted at this station. By H. J. Wheeler. Apr., 1899.

54. Commercial fertilizers. By H. J. Wheeler, B. L. Hartwell, and C. F. Kenyon. May, 1899.
55. Forcing rhubarb. By F. W. Card. June, 1899.
56. Analyses of commercial fertilizers. By H. J. Wheeler, B. L. Hartwell, and C. F. Kenyon. July, 1899.
57. Quantities of nitrogen for grass. By H. J. Wheeler and J. A. Tillinghast. Aug., 1899.
58. Financial gain from liming grass land. By H. J. Wheeler and J. A. Tillinghast. Aug., 1899.
59. Analyses of commercial fertilizers. By H. J. Wheeler and B. L. Hartwell. Sept., 1899.
60. Analyses of commercial fertilizers. By H. J. Wheeler and B. L. Hartewll. Nov., 1899.
61. On the mortality of incubator chicks. By G. W. Field, H. W. Marshall, and J. A. Warren. Dec., 1899.
62. Chemical methods for ascertaining the lime requirements of soils. By H. J. Wheeler, B. L. Hartwell, and G. L. Sargent. Feb., 1900.
63. Feeding stuff inspection. By H. J. Wheeler and B. L. Hartwell. Feb., 1900.
64. Feeding; feeding stuffs. By H. J. Wheeler and A. W. Bosworth. Mar., 1900.
65. Fertilizer experiment with potatoes. By H. J. Wheeler and J. A. Tillinghast. Apr., 1900.
66. Effect of lime upon grasses and weeds. By H. J. Wheeler and J. A. Tillinghast. Apr., 1900.
67. Commercial fertilizers. By H. J. Wheeler [and others]. May, 1900.
68. Treatment of the sandy soils of Rhode Island. By H. J. Wheeler and G. E. Adams. June, 1900.
69. A study of plant adaptations: Observations upon the growth of plants upon an acid upland soil, limed and unlimed. By H. J. Wheeler and J. A. Tillinghast. June, 1900.
70. Analyses of commercial fertilizers. By H. J. Wheeler [and others]. July, 1900.
71. Experiment in top dressing grass land. By H. J. Wheeler and J. A. Tillinghast. Aug., 1900.
72. Special instructions in poultry culture. By A. A. Brigham. Sept., 1900.
73. Commercial fertilizers. By H. J. Wheeler [and others]. Oct., 1900.
74. A rotation of crops: Potatoes, rye, clover. By H. J. Wheeler and J. A. Tillinghast. Nov., 1900.
75. A four-year rotation of crops: Indian corn, potatoes, rye, clover. By H. J. Wheeler and J. A. Tillinghast. Dec., 1900.
76. A five-year rotation of crops: Indian corn, potatoes, rye, grass, grass. By H. J. Wheeler and J. A. Tillinghast. Jan., 1901.
77. Rations for milch cows. By H. J. Wheeler and J. A. Tillinghast.—Feeding stuff analyses. By H. J. Wheeler and A. W. Bosworth. Mar., 1901.
78. Analyses of feeding stuffs. By H. J. Wheeler and A. W. Bosworth. Apr., 1901.
79. Analyses of commercial fertilizers. By H. J. Wheeler [and others]. July, 1901.
80. A modern dairy barn. By A. A. Brigham.—Individuality of cows. W. A. Conant. Aug., 1901.
81. Commercial fertilizers. By H. J. Wheeler [and others]. Oct., 1901.
82. Grass experiments. By H. J. Wheeler and G. E. Adams. Feb., 1902.
83. Improving an orchard. By F. W. Card. Mar., 1902.
84. Poultry feeding. By H. J. Wheeler.—Feeding stuffs. By H. J. Wheeler and A. W. Bosworth. Apr., 1902.
85. Analyses of commercial fertilizers. By H. J. Wheeler [and others]. June, 1902.
86. Goose septicemia. By Cooper Curtice. June, 1902.
87. Fowl typhoid. By Cooper Curtice. Sept., 1902.
88. The forests of Rhode Island. By F. W. Card. Oct., 1902.
89. Commercial fertilizers. By H. J. Wheeler and B. L. Hartwell. Oct., 1902.
90. Further experiments in top-dressing grass land. By H. J. Wheeler and G. E. Adams. Jan., 1903.
91. Bush fruits. By F. W. Card. Mar., 1903.
92. The soy bean. By G. E. Adams. Mar., 1903.
93. Commercial fertilizers. By H. J. Wheeler [and others]. June, 1903.
94. Commercial feeding stuffs. By H. J. Wheeler, A. W. Bosworth, and J. W. Kellogg. June, 1903.
95. Cooperative experiments in top-dressing grass land. By H. J. Wheeler. July, 1903.
96. Influence of lime upon plant growth. By H. J. Wheeler and G. E. Adams. Aug., 1903.
97. Commercial fertilizers. By H. J. Wheeler [and others]. Oct., 1903.
98. Analyses of feeding stuffs. By H. J. Wheeler [and others]. Jan., 1904.
99. A six-year rotation of crops. By H. J. Wheeler and G. E. Adams. Apr., 1904.
100. When to spray: formulas and notes on spraying. By A. E. Stene. May, 1904.
101. Analyses of commercial fertilizers. By H. J. Wheeler, B. L. Hartwell, and J. W. Kellogg. June, 1904.
102. Commercial fertilizers. By H. J. Wheeler, B. L. Hartwell, and J. W. Kellogg. Sept., 1904.
103. Experiments in grass culture. By H. J. Wheeler, G. E. Adams, [and B. L. Hartwell]. Dec., 1904.
104. Plant peculiarities as shown by the influence of sodium salts. By H. J. Wheeler. Appendix. A guide to the grounds of the agricultural experiment station at Kingston, Rhode Island. Feb., 1905.
105. Commercial feeding stuffs. By H. J. Wheeler [and others]. Apr., 1905.
106. Concerning the agricultural value of sodium salts. By H. J. Wheeler and G. E. Adams. May, 1905.
107. Soil treatment in greenhouse culture. By H. J. Wheeler and G. E. Adams. June, 1905.
108. Analyses of commercial fertilizers. By H. J. Wheeler [and others]. July, 1905.
109. A comparison of the results obtained by the method of cultures in paraffined wire pots with field results on the same soil. By H. J. Wheeler, B. E. Brown, and J. C. Hogensen. Oct., 1905.
110. Commercial fertilizers. By H. J. Wheeler [and others]. Nov., 1905.
111. Potatoes. By G. E. Adams. Feb., 1906.
112. Commercial feeding stuffs. By H. J. Wheeler [and others]. May, 1906.
113. Continuous corn culture. By G. E. Adams and H. J. Wheeler. June, 1906.
114. A test of nine phosphates with different plants. By H. J. Wheeler and C. E. Adams. June, 1906.
115. Commercial fertilizers. By H. J. Wheeler [and others]. July, 1906.
116. Corn selection. By F. W. Card. Oct., 1906.
117. Analyses of commercial fertilizers. By B. L. Hartwell [and others]. Nov., 1906.
118. Continued test of nine different phosphates upon limed and unlimed land with several varieties of plants. By H. J. Wheeler and G. E. Adams. Mar., 1907.
119. Analyses of commercial feeding stuffs. By H. J. Wheeler [and others]. Apr., 1907.
120. Soil tests in paraffined wire baskets compared with tests on farms. By B. L. Hartwell and C. L. Cook. May, 1907.
121. A study of Rhode Island soil requirements by means of field tests. By G. E. Adams. Appendix. Guide to the Rhode Island agricultural experiment station. June, 1907.
122. Analyses of commercial fertilizers. By B. L. Hartwell [and others]. June, 1907.
123. The rearing and management of turkeys with special reference to the blackhead disease. By Cooper Curtice. Aug., 1907.
124. Further experiments in connection with the blackhead disease of turkeys. By Cooper Curtice. Nov., 1907.
125. Commercial fertilizers. By B. L. Hartwell, J. F. Morgan, and L. F. Whipple. Nov., 1907.
126. Feeding experiments with chickens, cockerels, and turkeys. By J. W. Bolté. Jan., 1908. See 156.
127. Some recent feeding experiments. By B. L. Hartwell.—Analyses of commercial feeding stuffs. By B. L. Hartwell, J. F. Morgan, and L. F. Whipple. Apr., 1908.

128. A further study of soil treatment in greenhouse culture. By H. J. Wheeler and G. E. Adams. June, 1908.
129. Experiments with feldspathic rock as a source of potassium. By B. L. Hartwell and F. R. Pember. June, 1908.
130. Analyses of commercial fertilizers. By B. L. Hartwell [and others]. July, 1908.
131. Further soil tests with paraffined wire baskets. By B. L. Hartwell and F. R. Pember. Aug., 1908.
132. Analyses of commercial fertilizers. By B. L. Hartwell, J. F. Morgan, and L. F. Whipple. Nov., 1908.
133. Weeds, their eradication and control. By G. E. Adams. Apr., 1909.
134. Abstracts of feeding experiments. By B. L. Hartwell.—Analyses of commercial feeding stuffs. By B. L. Hartwell, J. F. Morgan, and L. F. Whipple. Apr., 1909.
135. Further results in a rotation of potatoes, rye and clover. By H. J. Wheeler and G. E. Adams. May, 1909.
136. Ropy milk in Rhode Island. By L. J. Cole and P. B. Hadley. June, 1909.
137. Analyses of commercial fertilizers. By B. L. Hartwell [and others]. July, 1909.
138. Analyses of commercial fertilizers. By B. L. Hartwell, J. F. Morgan, and L. F. Whipple. Nov., 1909.
139. Studies of the needs of Rhode Island soils. By H. J. Wheeler. Jan., 1910.
140. Abstracts of feeding experiments; analyses of feeding stuffs. By B. L. Hartwell. Apr., 1910.
141. Blackhead in turkeys: A study in avian coccidiosis. By L. J. Cole, P. B. Hadley, and W. F Kirkpatrick. June 28, 1910.
142. The availability of certain unusual nitrogenous manures. By B. L. Hartwell and F. R. Pember. June, 1910
143. Nitrogen content and yield of crops as affected by different nitrogenous manures. By B. L. Hartwell, H. J. Wheeler, and F. R. Pember. June, 1910.
144. Fowl cholera and methods of combating it. By P. B. Hadley. Nov., 1910.
145. Protein concentrates for winter chickens. By B. L. Hartwell and W. F. Kirkpatrick. Apr., 1911. See 156
146. A biological study of eleven pathogenic organisms from cholera-like diseases in poultry. By P. B. Hadley and Elizabeth E. Amison. June, 1911.
147. The gain in nitrogen during a five-year pot experiment with different legumes. By B. L. Hartwell and F. R. Pember. Dec., 1911.
148. Field experiments on individual farms. By H. J. Wheeler. Jan., 1912.
149. Cooperative study of Rhode Island soil deficiencies. By H. J. Wheeler. Jan., 1912.
150. Studies on fowl cholera: II, The role of an homologous culture of slight virulence in the production of active immunity in rabbits: By P. B. Hadley. Mar., 1912.
151. The effect of cow dung on the availability of rock phosphate. By B. L. Hartwell and F. R. Pember. June, 1912.
152. Cooperative experiments in alfalfa culture. By H. J. Wheeler [and others]. Oct., 1912.
153. The effect of sodium manuring on the composition of plants. By B. L. Hartwell and P. H. Wessels. Mar., 1913.
154. The percentage of total phosphorus in flat turnips as influenced by the amount available in soils. By B. L. Hartwell. Apr., 1913.
155. Studies on inheritance in poultry: I, The constitution of the White Leghorn breed. By P. B. Hadley, D. W. Caldwell, and C. H. Magoon. June, 1913.
156. The availability of the nitrogen of cottonseed meal and beef scrap for chicks. By B. L. Hartwell and R. A. Lichtenthaeler. Mar., 1914. Includes abstracts of 126, 145.
157. Studies on fowl cholera: III, The inheritance in rabbits of immunity to infection with the bacterium of fowl cholera. By P. B. Hadley. Apr., 1914.
158. Studies on inheritance in pigeons: I, Hereditary relations of the principal colors. By L. J. Cole. May, 1914.
159. Studies on fowl cholera: IV, The reciprocal relations of virulent and avirulent cultures in active immunization. By P. B. Hadley. June, 1914.
160. The comparative effect on different kinds of plants of liming an acid soil. By B. L. Hartwell and S. C. Damon. Oct., 1914.
161. Studies on inheritance in poultry: II, The factor for black pigmentation in the White Leghorn breed. By P. B. Hadley. Dec., 1914.
162. Sex ratios in pigeons, together with observations on the laying, incubation, and hatching of the eggs. By L. J. Cole and W. F. Kirkpatrick. Apr., 1915.
163. The comparative value of different sources of phosphorus. By B. L. Hartwell and S. C. Damon. June, 1915.—[Title page and contents to] Bulletins 152–163, July 1, 1912, to June 30, 1915.
164. The bacterial infection of fresh eggs. By P. B. Hadley and D. W. Caldwell. Jan., 1916.
165. Starch congestion accompanying certain factors which retard plant growth. By B. L. Hartwell. May, 1916.
166. The rôle of the flagellated protozoa in infective processes of the intestines and liver. By P. B. Hadley June, 1916.
167. A twenty-year comparison of different rotations of corn, potatoes, rye and grass. By B. L. Hartwell and S. C. Damon. June, 1916.
168. The avenue and development of tissue-infection in intestinal trichomoniasis. By P. B. Hadley. Nov., 1916.
169. Studies by means of both pot and solution culture of the phosphorus and potassium requirements of the barley plant during its different periods of growth. By F. R. Pember. Jan., 1917.
170. The persistence of lawn and other grasses as influenced especially by the effect of manures on the degree of soil acidity. By B. L. Hartwell and S. C. Damon. Apr., 1917.
171 The value of Thomas slag phosphate for neutralizing soil as well as for supplying phosphorus. By B. L. Hartwell, F. R. Pember and S. C. Damon. June, 1917.
172 Infections caused by *Bacterium pullorum* in adult fowls. By P. B. Hadley [and others]. Nov., 1917.
173. Miscellaneous experiments with corn. By B. L. Hartwell and S. C. Damon. Apr., 1918.
174. The colon-typhoid intermediates as causative agents of disease in birds: I, The paratyphoid bacteria. By Philip Hadley, Marguerite W. Elkins and Dorothy W. Caldwell. May, 1918.
175. The influence of crop plants on those which follow, I. By B. L. Hartwell and S. C. Damon. June, 1918.
176. The influence of crop plants on those which follow, II. By B. L. Hartwell, F. R. Pember and G. E. Merkle. Mar., 1919.
177. The value of sodium when potassium is insufficient. By B. L. Hartwell and S. C. Damon. Apr., 1919.
178. A five-year rotation of potatoes, rye straw and squashes, onions, oats and rowen, and hay. By S. C. Damon. May, 1919.
179. Studies on fowl cholera: VI, Immunization against *Bacillus avisepticus* by means of inoculations with killed cultures of virulent and avirulent strains. By Philip Hadley and Dorothy W. Caldwell. June, 1919.
180. A field comparison of hydrated lime with limestone of different degrees of fineness. By B. L. Hartwell and S. C. Damon. Dec., 1919.

181. Studies on the inheritance of egg-weight: I, Normal distribution of egg-weight. By Philip Hadley and Dorothy W. Caldwell. Jan., 1920.
182. Fertilizer verses manure for continuous vegetable growing. By B. L. Hartwell and S. C. Damon. May, 1920.
183. Field experiments which included the soy bean. By B. L. Hartwell. June, 1920.

SOUTH CAROLINA.

University of South Carolina Agricultural Experiment Station, Columbia.

BULLETINS.

1. Tests of varieties of cotton. By J. M. McBryde. Apr., 1888.
2. Tests of commercial seeds. By R. H. Loughridge. May, 1888.
3. Analyses of fertilizers and feeding stuffs. By W. B. Burney and R. H. Loughridge. July, 1888.
4. Entomology. By G. F. Atkinson. Jan., 1889.
5. Oats and wheat. By J. M. McBryde. Apr., 1889.
6. Hog cholera. By W. B. Niles and B. M. Bolton. July, 1889.
7. Meteorological data, Nov., 1888-June, 1889. By Milton Whitmey. Oct., 1889.
8. Chemical statistics of corn crop of South Carolina; maize fodder ensilage; cowpeas as a forage crop; composition of soja bean vines. By J. B. McBryde. Mar., 1890.

South Carolina Agricultural Experiment Station, Clemson College.

BULLETINS.

1. Table of analyses of commercial fertilizers, season 1890-91, Part 1. July, 1891.
2. Cotton experiments with varieties and with fertilizers. By J. B. McBryde. July, 1891.
3. Table of analyses of commercial fertilizers, season 1890-91, Part 2. Oct., 1891.
4. Fertilizer tests with wheat; varieties of wheat and oats. By J. F. Duggar. Dec., 1891.
5. Methods of keeping sweet potatoes. By J. F. Duggar. July, 1892.
6. Analyses of commercial fertilizers. July, 1892.
7. Experiments with oats and wheat. By J. F. Duggar. Sept., 1892.
8. On the available phosphoric acid and the water-soluble potash in cotton seed meal; on the methods of preparing solutions of cotton seed meal for precipitation of the phosphoric acid; on the occurrence of meta-phosphoric acid and pyro-phosphoric acid in cotton seed meal. By M. B. Hardin. Dec., 1892.
9. Experiments with Irish potatoes. By J. F. C. Du Pre. Mar., 1893.
10. Notes on varieties of beans. By J. F. C. Du Pre. Apr., 1893.
11. Analyses of commercial fertilizers, Part 1. Apr., 1893.
12. Cooperative soil tests of fertilizers. By J. S. Newman. May, 1893.
13. Analyses of commercial fertilizers, Part 2. July, 1893.
14. Experiments with corn. By J. S. Newman. Aug., 1893.
15. Fertilizer experiments with corn. [By J. S. Newman.] Mar., 1894.
16. Experiments with tomatoes. By J. F. C. Du Pre. Apr., 1894.
17. Analyses of commercial fertilizers for the season 1893-94. July, 1894.
18. Fertilizer experiments with cotton. By J. N. Hook. Aug., 1894.
19. Dairying. By J. W. Hart. Mar., 1895.
20. Analyses of commercial fertilizers, season of 1894-95. June, 1895.
21. The determination of the oxides of iron and aluminum in presence of phosphoric acid, lime, and magnesia. By F. S. Shiver. Sept., 1895.
22. Colic in horses and mules. By W. E. A. Wyman. Nov., 1895.
23. Lameness in horses and mules. By W. E. A. Wyman. Apr., 1896.
24. Analyses of commercial fertilizers, season of 1895-96: Part 1, May, 1896. Part 2, July, 1896.
25. Distemper in horses and mules. By W. E. A. Wyman. June, 1896.
26. Founder in horses and red water in cattle. By W. E. A. Wyman. Sept., 1896.
27. Wounds and their treatment. By W. E. A. Wyman. Oct., 1896.
28. The sweet potato as a starch producer. By F. S. Shiver. June, 1897.
29. Analyses of commercial fertilizers. Apr., 1897.
30. The determination of starch in the sweet potato. By F. S. Shiver. June, 1897.
31. Hog cholera and swine plague. By W. E. A. Wyman. Oct., 1897.
32. Protection and improvement of worn soils. By J. S. Newman. Nov., 1897.
33. Tests of dairy methods and apparatus. By J. W. Hart.—Comparative tests of butter fat. By F. S. Shiver. Mar., 1898.
34. Sugar beets. By M. B. Hardin [and others]. May, 1898.
35. Analyses of commercial fertilizers. June, 1898.
36. Diseases of plants. By A. P. Anderson. Sept., 1898.
37. Wheat. By J. S. Newman and C. M. Conner. Oct., 1898.
38. The asparagus rust in South Carolina. By A. P. Anderson and J. F. C. Du Pre. Feb., 1899.
39. Suggestions to auxiliary clubs. By [J. S. Newman] and C. M. Conner. Feb., 1899.
40. Farm manures for cotton. By C. M. Conner. Feb., 1899.
41. Rice blast and a new smut on the rice plant. By A. P. Anderson. Preliminary report on treatment for rice smut. By Ernest Walker. Mar., 1899.
42. Varieties of cotton. By J. S. Newman. Mar., 1899.
43. Analyses of commercial fertilizers, season of 1898-99. By M. B. Hardin. Apr., 1899.
44. Corn. By J. S. Newman. June, 1899.
45. Analyses of commercial fertilizers. June, 1899.
46. Cotton: Fertilizer experiments. By J. S. Newman. June, 1899.
47. A chemical study of the sea island cotton plant. By F. S. Shiver. June, 1899.
48. Broad and narrow tires. By C. M. Conner. Dec., 1899.
49. Strawberries. By C. C. Newman. Jan., 1900.
50. Tuberculosis of cattle. By G. E. Nesom. Jan., 1900.
51. Silo construction and silage. By C. M. Conner. Apr., 1900.
52. Pig feeding. By J. S. Newman, J. S. Pickett [and F. S. Shiver]. Apr., 1900.
53. Analyses of commercial fertilizers. By M. B. Hardin. Apr., 1900.
54. Analyses of commercial fertilizers. By M. B. Hardin. June, 1900.
55. Feeding rice meal to pigs. By C. M. Conner. Oct., 1900.
56. Wheat. By J. S. Newman and J. S. Pickett. Oct., 1900.
57. Fungicides. Dec., 1900.

58. Grapes. By C. C. Newman. Feb., 1901.
59. A chemical investigation of the rice plant and of the product and by-products of the rice industry. By C. C. McDonnell. Jan., 1901.
60. Analysis of commercial fertilizers. Apr., 1901.
61. Experiments in corn culture. By J. S. Newman. June, 1901.
62. Capons and caponizing. By O. M. Watson. May, 1901.
63. Sweet potato: Effects of different forms of potash upon the starch content; changes in composition on storing; relative value of different methods of storing. By F. S. Shiver. June, 1901.
64. Analysis of commercial fertilizers. June, 1901.
65. San José scale, with a few suggestions for its treatment, and rules and regulations adopted by the State board of entomology. July, 1901.
66. Feeding corn stover; dehorning milch cows. By C. M. Conner. Feb., 1902.
67. Stock feeding. By C. M. Conner. Mar., 1902.
68. A chemical study with Sea Island cotton seed. By F. S. Shiver. Feb., 1902.
69. Brown rot of peaches and plums. By C. C. Newman. Mar., 1902.
70. Analyses of commercial fertilizers. Apr., 1902.
71. New method of preserving [evaporating] sweet potatoes. By J. S. Newman and J. S. Pickett. May, 1902.
72. Texas fever, Part I. By G. E. Nesom. June, 1902.
73. Analysis of commercial fertilizers. June, 1902.
74. Experiments with poultry. By O. M. Watson. Nov., 1902.
75. Cotton culture. By J. S. Newman. Apr., 1903.
76. Bermuda grass. By J. S. Newman. Nov., 1902.
77. The standardization of sulphuric acid. By F. S. Shiver. Nov., 1902.
78. The nature, determination, and distribution of the pentosans in the Sea Island cotton. By F. S. Shiver. Dec., 1902.
79. A rotation study. By F. S. Shiver. Apr., 1903.
80. Analyses of commercial fertilizers, season of 1902–3 [Part 1]. By M. B. Hardin. Apr., 1903.
81. Artificial incubation of chickens. By O. M. Watson. June, 1903.
82. Analyses of commercial fertilizers, season of 1902–3. June, 1903.
83. Results of practical experiments with peach borer. By C. C. Newman. Mar., 1904.
84. The one-horse farm. By J. S. Newman. Apr., 1904.
85. Commercial fertilizers. Summary of analyses for 1902–03; comparison with results of previous years; remarks on cottonseed meal. By M. B. Hardin. Apr., 1904.
86. Tobacco culture in South Carolina. By T. B. Young. May, 1904.
87. Analyses of commercial fertilizers, season of 1903–4. Apr., 1904.
88. Sorghum as a syrup plant. By J. S. Newman, H. Benton, F. S. Shiver, and J. S. Pickett. May, 1904.
89. Sanitary conditions in the home and on the farm. By Haven Metcalf. May, 1904.
90. Texas fever: II, Inoculation. By G. E. Nesom. July, 1904.
91. Coast experiments; report of progress. Aug., 1904.
92. Analyses of commercial fertilizers, season 1903–4, By M. B. Hardin. Aug., 1904.
93. Grasses and forage plants. By H. Benton. Jan., 1905.
94. Analyses of commercial fertilizers. Jan., 1905.
95. The milk scales, the milk sheet, and the Babcock test for the farmers of South Carolina. By B. H. Rawl. Mar., 1905.
96. A chemical study of the tea industry in South Carolina. By F. S. Shiver. Feb., 1905.
97. Analysis of commercial fertilizers. Feb., 1905.
98. Analysis of commercial fertilizers. Feb., 1905.
99. Analysis of commercial fertilizers. Feb., 1905.
100. Analyses of commercial feritlizers. Feb., 1905.
101. Analyses of commercial fertilizers. Mar., 1905.
102. Analyses of commercial fertilizers. Mar., 1905.
103. Report of experiments with forage crops at the Coast Land Experiment Station, 1904. By J. S. Newman and W. D. Garrison. Apr., 1905.
104. Analyses of commercial fertilizers. Mar., 1905.
105. Analyses of cotton seed meals. Mar., 1905.
106. Analyses of commercial fertilizers. Mar., 1905.
107. Analyses of commercial fertilizers. Apr., 1905.
108. Analyses of commercial fertilizers. Apr., 1905.
109. Notes on varieties of apples. By C. C. Newman. May, 1905.
110. Analyses of commercial fertilizers. Apr., 1905.
111. Analyses of commercial fertilizers. Apr., 1905.
112. Analyses of commercial fertilizers. May, 1905.
113. Analyses of commercial fertilizers. May, 1905.
114. A wasting disease of young cattle (verminous gastritis). By L. A. Klein. May, 1905.
115. Analyses of commercial fertilizers, season of 1904–5. By M. B. Hardin. May, 1905.
116. Methods of spraying cucumbers and melons. By W. A. Orton and W. D. Garrison. Oct., 1905.
117. A comparison of wheat bran and cottonseed meal for milk production. By John Michels and J. M. Burgess. Dec., 1905.
118. Gathered cream plants. By John Michels. Feb., 1906.
119. Analyses of commercial fertilizers. May, 1906.
120. Cotton experiments. By C. L. Newman. Apr., 1906.
121. A preliminary report on the blast of rice, with notes on other rice diseases. By Haven Metcalf. May, 1906.
122. "Calf scours," a new method of treatment. By L. A. Klein. May, 1906.
123. Forage crops grown at Coast Land Experiment Station. By W. D. Garrison. May, 1906.
124. The "Williamson plan" of corn culture. By C. L. Newman. Jan., 1907.
125. Preliminary report on the water content, melting point, and keeping quality of butter. By John Michels and F. S. Shiver. Jan., 1907.
126. Analyses of commercial fertilizers. By M. B. Hardin. June, 1907.
127. Alfalfa or lucerne. By C. L. Newman. Mar., 1907.
128. Stock feeding. By John Michels. Mar., 1907.
129. Improvement of the wood lot. By H. D. House. Mar., 1907.
130. Methods of eradicating cattle ticks. By L. A. Klein. May, 1907.
131. Cottonseed meal and corn silage as a ration for dairy cows. By John Michels and J. M. Burgess. June, 1907.

132. Rotundifolia grapes. By C. C. Newman. Dec., 1907.
133. Report of coast land experiments. By J. M. Jenkins. Dec., 1907.
134. The San José scale. By A. F. Conradi. Jan., 1908.
135. The Williamson plan in 1907. By C. L. Newman. Mar., 1908.
136. The manufacture of starch from sweet potatoes. By C. C. McDonnell. Apr., 1908.
137. Hook-worm disease of cattle (uncinariasis). By A. F. Conradi and E. Barnett. May, 1908.
138. Analyses of commercial fertilizers. By M. B. Hardin. June, 1908.
139. Milk fever (parturient paresis) its prevention and successful treatment. June, 1908.
140. Some conditions influencing cotton production. By C. L. Newman. June, 1908.
141. Treatment of plant diseases and injurious insects in South Carolina. By H. W. Barre and A. F. Conradi. Feb., 1909.
142. Stomach worm disease of sheep and young cattle. By M. R. Powers. Mar., 1909.
143. Some injurious orchard insects. By A. F. Conradi and W. A. Thomas. Mar., 1909.
144. Celery. By C. C. Newman. Apr., 1909.
145. Fertilizer experiments with cotton. By J. N. Harper. Apr., 1909.
146. Sweet potato work in 1908. By T. E. Keitt. Apr., 1909.
147. Analyses of commercial fertilizers. By M. B. Hardin [and others]. June, 1909.
148. Experiments with hybrid cottons. By J. M. Harper. Apr., 1910.
149. Fall and winter cabbages. By C. C. Newman. Apr., 1910.
150. Farm management for controlling field crop insects. By A. F. Conradi. June, 1910.
151. Soils and fertilizers. By T. E. Keitt. June. 1910.
152. Hog cholera and the serum method of treatment. By E. Barnett. June, 1910.
153. Notes on varieties of tomatoes. By C. C. Newman.—Tomato diseases. By H. W. Barre. June, 1910.
154. Analyses of commercial fertilizers. By M. B. Hardin [and others]. June, 1910.
155. Corn and cotton wireworm (*Horistonotus curiatus* Say). By W. A. Thomas. Mar., 1911.
156. The formation of sugars and starch in the sweet potato. By T. E. Keitt. June, 1911.
157. Permanent lawns for the south. By C. C. Newman. June, 1911.
158. The apple tree tent caterpillar (*Malacosoma americana*). By A. F. Conradi. June, 1911.
159. A chemical study of certain sandhill soils of South Carolina. By T. E. Keitt. June, 1911.
160. Analyses of commercial fertilizers. By R. N. Brackett [and others]. Sept., 1911.
161. The southern corn-root worm in South Carolina (*Diabrotica 12-punctata* Oliv.). By W. A. Thomas. Mar., 1912.
162. Experiments with varieties of cotton. By J. N. Harper and F. G. Tarbox, jr. Jan., 1912.
163. Changes in composition of the oat plant, as it approaches maturity. By T. E. Keitt and F. G. Tarbox, jr. Apr., 1912.
164. Cotton anthracnose. By H. W. Barre. Apr., 1912.
165. Sweet potato investigation. By T. E. Keitt. June. 1912.
166. Home gardening in South Carolina. By C. C. Newman. Jan., 1912.
167. Reclamation of crawfish lands. By W. D. Garrison. June, 1912.
168. Hog cholera and its control. By M. R. Powers. Sept., 1912.
169. Feeding beef cattle in South Carolina. By Archibald Smith. Sept., 1912.
170. The corn weevil (*Calandra oryza* Linn.). By W. P. Gee. Oct., 1912.
171. Analyses of commercial fertilizers. By R. N. Brackett [and others]. Sept., 1912.
172. Analyses of commercial fertilizers. By R. N. Brackett [and others]. Sept., 1913.
173. Potash in mixed fertilizers. By T. E. Keitt. Sept., 1913.
174. A little known lantern fly of corn. (*Peregrinus maidis* Ashm.). By W. A. Thomas. Dec., 1913.
175. The cotton root louse (*Aphis maidi radicis*). By W. A. Thomas. Mar., 1914.
176. Practical orchard pruning. By F. J. Crider. Apr., 1914.
177. Analyses of commercial fertilizers. By R. N. Brackett [and others]. Sept., 1914.
178. Results of fertilizer experiments conducted at Summerville, S. C. By T. E. Keitt. Oct., 1914.
179. The spotted click beetle (*Monocrepidius vespertinus* Fab.). By A. F. Conradi and H. C. Eagerton. Dec., 1914.
180. Corn and cotton wireworm (*Horistonotus uhlerii* Horn). By A. F. Conradi and H. C. Eagerton. Dec., 1914.
181. Analyses of commercial fertilizers. By R. N. Brackett [and others]. Nov., 1915.
182. Potash. By T. E. Keitt and C. J. King. Dec., 1915.
183. Limestone and marl deposits of South Carolina. By F. H. H. Calhoun. Dec., 1915.
184. Angular leaf spot of cotton. By F. M. Rolfs. Dec., 1915.
185. Cotton: Varieties and limiting factor tests. By W. L. Hutchinson. Jan., 1916.
186. Corn: Varieties, ear-row, and limiting factor tests. By W. L. Hutchinson. Feb., 1916.
187. Analyses of commercial fertilizers. By R. N. Brackett [and others]. Sept., 1916.
188. A new, rapid, and accurate method for estimating lime and potash in soils. By T. E. Keitt and C. J. King. [1916?]
189. Cotton: Varieties and limiting factor tests, 1916. By W. L. Hutchinson. Jan., 1917.
190. Corn: Varieties and limiting factor tests, season 1916. By W. L. Hutchinson. Jan., 1917.
191. Results of fertilizing experiments with cotton at the Clemson College Station. By T. E. Keitt. Aug., 1917.
192. Comparative tests of sources of nitrogen on coastal plains soils. By T. E. Keitt. Aug., 1917.
193. Results of fertilizer experiments conducted at the Pee Dee Station. By T. E. Keitt. Dec., 1917.
194. Analyses of commercial fertilizers. By R. N. Brackett [and others]. Sept., 1917.
195. Irish potato breeding. By C. C. Newman and L. A. Leonian. June, 1918.
196. A chemical process of peeling peaches. By C. C. Newman and Benjamin Freeman. June, 1918.
197. Analyses of commercial fertilizers. By R. N. Brackett and H. M. Stackhouse. July, 1918.
198. The angular leaf spot of cotton. By R. C. Faulwetter. Feb., 1919.
199. The Cicadellidae or leaf hoppers of South Carolina. By F. H. Lathrop. June, 1919.
200. Analyses of commercial fertilizers. By R. N. Brackett and H. M. Stackhouse. Sept., 1919.
201. Creosoting fence posts. By H. W. Barre. Sept., 1919.
202. Trona potash: A progress report. By C. P. Blackwell and G. H. Collings. Mar., 1920.
203. Analyses of commercial fertilizers. By R. N. Brackett and H. M. Stackhouse. Sept., 1920.
204. The slender wireworm: Its relation to soils. By G. M. Anderson. Sept., 1920.
205. Muscadine grapes: Culture and varieties. By W. J. Young. Nov., 1920.
206. Products and utilization of muscadine grapes. By W. J. Young. Nov., 1920.

INDEXES.

Index to the Bulletins Nos. 48-78 and annual reports 1899-1903. 1904.

SOUTH DAKOTA.

South Dakota Agricultural Experiment Station, Brookings.

BULLETINS.

Buls. 1–15, 1887–1889, are bulletins of the Dakota Agricultural College and Experiment Station.

1. Notes on the growth of trees in the college grounds. By C. A. Keffer. Nov., 1887.
2. Organization [results of first season's work with field crops.] By Luther Foster. Apr. 1888.
3. Arbor day: Why to plant, what to plant, how to plant. By C. A. Keffer. Apr., 1888.
4. Announcements and reports of progress of work in the Departments of agriculture, forestry, horticulture, and entomology. By C. A. Keffer, Luther Foster, and I. H. Orcutt. July, 1888.
5. Garden notes, with table of meteorological observations. By C. A. Keffer. Oct., 1888.
6. Meteorological tables, May–November, to accompany garden notes and other field observations. By C. A. Keffer. Dec., 1888. Republished with 7 under one cover with single pagination.
7. Notes on small fruits, the orchard, and ornamental plants. By C. A. Keffer. Jan., 1889.
8. The drinking waters of Dakota. By J. H. Shepard. Dec., 1888.
9. Corn. By Luther Foster. Jan., 1889.
10. The germination of frosted grain. By C. A. Keffer. Feb., 1889.
11. Small grain: Wheat, oats, and barley. By Luther Foster. Mar., 1889.
12. Forestry. By C. A. Keffer. Apr., 1889.
13. Department of entomology. By I. H. Orcutt. Apr., 1889.
14. The sugar beet. By J. H. Shepard. Apr., 1889.
15. Forestry. By C. A. Keffer. Nov., 1889.
16. The sugar beet. By Luther Foster and J. H. Shepard. Feb., 1890.
17. Small grain. By Luther Foster. Mar., 1890.
18. The cut-worm. By I. H. Orcutt and J. M. Aldrich. Mar., 1890.
19. The sugar beet. By Luther Foster and J. H. Shepard. Dec., 1890.
20. Forestry. By C. A. Keffer. Jan., 1891.
21. Small grain. By Luther Foster. Feb., 1891.
22. Injurious insects. By I. H. Orcutt and J. M. Aldrich. Mar., 1891.
23. Forest trees, fruits, and vegetables. By C. A. Keffer. Apr., 1891.
24. Corn. By Luther Foster. May, 1891.
25. Glanders. By C. A. Cary. June, 1891.
26. Strawberry, sand cherry, and orchard notes. By C. A. Keffer. July, 1891.
27. The sugar beet in South Dakota. By J. H. Shepard. Nov., 1891.
28. Irrigation. By Luther Foster and C. A. Duncan. Dec., 1891.
29. Forestry. By C. A. Keffer.—Fungi. By T. A. Williams. Dec., 1891.
30. Department of Entomology. By I. H. Orcutt and J. M. Aldrich. Mar., 1892.
31. Department of Meteorology. May, 1892.
32. Forestry. By J. C. Whitten. Dec., 1892.
33. Some plants injurious to stock. By T. A. Williams. Feb., 1893.
34. The sugar beet. By J. H. Shepard. Apr., 1893.
35. Fungous diseases, insect pests. By T. A. Williams.—Fungicides and insecticides. By L. C. Corbett. May, 1893.
36. Scab, lumpy jaw, and anthrax. By D. A. Cormack. June, 1893.
37. Tomatoes. By L. C. Corbett. Dec., 1893.
38. Feeding wheat to hogs. By E. C. Chilcott. Jan., 1894.
39. Milk tests and comparison tables. By A. H. Wheaton. Feb., 1894.
40. Native and introduced forage plants. By T. A. Williams and J. H. Shepard. May, 1894.
41. The artesian waters of South Dakota. By J. H. Shepard. Jan., 1895.
42. Squashes. By L. C. Corbett. Feb., 1895.
43. Native trees and shrubs. By T. A. Williams. May, 1895.
44. Forestry. By L. C. Corbett. June, 1895.
45. Forage plants. By T. A. Williams. Nov., 1895.
46. Building creameries and organization of cooperative creamery companies. By J. M. Trueman. Feb., 1896.
47. Tomatoes, beans, onions; a cheap hothouse. By L. C. Corbett. Mar., 1896.
48. Potato scab; three injurious insects. By T. A. Williams. Apr., 1896.
49. Shallow artesian wells of South Dakota. By J. H. Shepard. Dec., 1896.
50. Fruit culture. By N. E. Hansen. Jan., 1897.
51. Forage plants of South Dakota; silos and silage. By E. C. Chilcott. Feb., 1897.
52. Irrigation in South Dakota. By J. H. Shepard and E. C. Chilcott. Mar., 1897.
53. Forestry in South Dakota. By L. C. Corbett. Apr., 1897.
54. Subsoiling. By N. E. Hansen, E. C. Chilcott, and E. A. Burnett. May 1897.
55. Feeding sheep in South Dakota. By E. C. Chilcott and E. A. Burnett. June, 1897.
56. Sugar beets in South Dakota. By J. H. Shepard. Jan., 1898.
57. Four injurious insects. By De Alton Saunders. Feb., 1898.
58. Moisture investigations for 1897. By E. C. Chilcott and A. B. Holm. Mar., 1898.
59. Forage and garden crops in the James River Valley. By J. H. Shepard and E. C. Chilcott. Apr. 1898.
60. Millet. By E. C. Chilcott and De Alton Saunders. May, 1898.
61. Forage and garden crops in the James River Valley in 1898. By E. C. Chilcott and R. S. Roe. Jan., 1899.
62. Sugar beets in South Dakota. By J. H. Shepard and W. H. Knox. Feb., 1899.
63. Pig feeding in South Dakota. By E. A. Burnett. Mar., 1899.
64. Ferns and flowering plants of South Dakota. By De Alton Saunders. Apr., 1899.
65. Root killing of apple trees. By N. E. Hansen. July, 1899.
66. Drought-resisting forage plants at the cooperative range experiment station, Highmore, S. Dak. By J. H. Shepard and De Alton Saunders. Mar., 1900.
67. Watermelons and muskmelons in South Dakota. By N. E. Hansen and W. S. Thornber. Apr., 1900.
68. Vegetables in South Dakota. By N. E. Hansen and W. S. Thornber. Nov., 1900.
69. Native and introduced forage plants. By J. H. Shepard, De Alton Saunders, and W. H. Knox. Jan., 1901.
70. Drought resistant forage experiments at Highmore, S. Dak., for 1900. By De Alton Saunders. Feb., 1901.
71. Speltz vs. barley: A comparison of the food value of speltz and barley as a single grain ration for fattening sheep. By E. C. Chilcott and W. T. Thornber. Feb., 1901.
72. Ornamentals for South Dakota. By N. E. Hansen. June, 1901.

73. Variations in cream and milk tests. By A. H. Wheaton. Jan., 1902. With supplement circular of information on building and equipping creameries, with instructions how to organize and maintain cooperative creamery associations in South Dakota. By A. H. Wheaton. Feb., 1902.
74. Drought resistant forage experiments at Highmore substation. By De Alton Saunders [and L. W. Carter]. Mar., 1902.
75. Treatment of smuts and rusts. By De Alton Saunders. June, 1902.
76. A study of northwestern apples. By N. E. Hansen. June, 1902.
77. Macaroni wheat in South Dakota. By E. C. Chilcott [and others]. Dec., 1902.
78. A preliminary report on the fringed tapeworm of sheep (*Thysanosoma fimbriata*). By E. L. Moore. Apr., 1903.
79. Crop rotation for South Dakota. By E. C. Chilcott. May, 1903.
80. Lamb feeding; fattening sheep on grass. By J. W. Wilson and H. G. Skinner. May, 1903.
81. Pasture and forage plants for South Dakota. By E. C. Chilcott.—Feeding dairy cows. By J. W. Wilson and H. G. Skinner.—Flies. By E. L. Moore.—The artesian waters of South Dakota. By J. H. Shepard.—Some destructive insects. By De Alton Saunders.—Elements of prairie horticulture. By N. E. Hansen. June, 1903.
82. Macaroni wheat, its milling and chemical characteristics. By J. H. Shepard. Dec., 1903.
83. Millet for fattening swine. By J. W. Wilson and H. G. Skinner. Mar., 1904.
84. Report of investigations at the Highmore Station for 1903. By W. A. Wheeler. Apr., 1904.
85. Early garden peas. By N. E. Hansen. Apr., 1904.
86. Fattening range lambs. By J. W. Wilson and H. G. Skinner. May, 1904.
87. The western sand cherry. By N. E. Hansen. June, 1904.
88. Breeding hardy fruits. By N. E. Hansen. June, 1904.
89. Preliminary experiments with vapor treatments for the prevention of the stinking smut of wheat. By W. A. Wheeler. Nov., 1904.
90. Tankage and other by-products of pigs; shrunken wheat for swine. By J. W. Wilson and H. G. Skinner. Feb., 1905.
91. Cooperative vegetable tests in 1904—peas, beans, sweet corn, and cabbage. By N. E. Hansen, V. Fulkerson, and E. G. Sanderson. Feb., 1905.
92. Macaroni wheat, its milling and chemical characteristics and its adaptation for making bread and macaroni. By J. H. Shepard. Apr., 1905.
93. Plums in South Dakota. By N. E. Hansen. May, 1905.
94. Alfalfa and red clover. By J. W. Wilson and H. G. Skinner. Jan., 1906.
95. The treatment of nail pricks of the horse's foot. By E. L. Moore. Feb., 1906.
96. Forage plants at Highmore substation for 1904–5. By W. A. Wheeler and Sylvester Balz.—Cereal investigations at Highmore. By J. S. Core and Sylvester Balz. Mar., 1906.
97. Speltz and millet for the production of baby beef. By J. W. Wilson and H. G. Skinner. May, 1906.
98. Crop rotation. By J. S. Cole. June, 1906.
99. Macaroni or durum wheat. (A continuation of Bulletin 92.) By J. H. Shepard. June, 1906.
100. The feeding value of speltz in beef and pork production. By J. W. Wilson and H. G. Skinner. Jan., 1907.
101. Forage plants at the Highmore substation for 1906. By W. A. Wheeler and Sylvester Balz. Mar., 1907.
102. Evergreens for South Dakota. By N. E. Hansen. Apr., 1907.
103. Breeding hardy strawberries. By N. E. Hansen and Charles Haralson. June, 1907.
104. Raspberries, blackberries and dewberries. By N. E. Hansen and Charles Haralson. June, 1907.
105. Stock food for pigs. By J. W. Wilson and H. G. Skinner. Feb., 1908.
106. Growing sugar beet seed in South Dakota. By J. H. Shepard. Mar., 1908.
107. Sheep scab. By E. L. Moore. Apr., 1908.
108. New hybrid fruits. By N. E. Hansen. May, 1908.
109. Rusts of cereals and other plants. By E. W. Olive. June, 1908.
110. Progress in variety test of oats. By Clifford Willis. Dec., 1908.
111. A study of South Dakota butter with suggestions for improvements. By Christian Larsen and J. H. Shepard. Jan., 1909.
112. The killing of mustard and other noxious weeds in grain fields by the use of iron sulphate. By E. W. Olive. Mar., 1909.
113. Progress in variety tests of barley. By Clifford Willis and J. V. Bopp. Mar., 1909.
114. Digestion coefficients of grains and fodders for South Dakota: Experiments with sheep. By J. H. Shepard and A. E. Koch. May, 1909.
115. Report of work for 1907 and 1908 at Highmore substation. By Clifford Willis. June, 1909.
116. Acidity of creamery butter and its relation to quality. By Christian Larsen, T. H. Lund, and L. F. Miller. Nov., 1909.
117. Growing sugar beet seed in South Dakota. By J. H. Shepard. Nov., 1909.
118. Corn. By Clifford Willis and H. B. Potter. Feb., 1910.
119. Fattening Lambs. By J. W. Wilson. Mar., 1910.
120. Progress in variety tests of alfalfa. By Clifford Willis and J. V. Bopp. Apr., 1910.
121. Growing sugar beet seed in South Dakota. By J. H. Shepard. May, 1910.
122. Creamery butter: Factors affecting acidity; the acid test as a measure of deterioration; handling cream to improve quality of butter. By Christian Larsen, T. H. Lund, and L. F. Miller. June, 1910.
123. Milk powder starters in creameries. By Christian Larsen and William White. Dec., 1910.
124. Progress of grain investigations, 1903–1910. By Clifford Willis and Manley Champlin. Nov., 1910.
125. Fattening steers at different ages. By J. W. Wilson. Mar., 1911.
126. Alkali soils. By Clifford Willis and J. V. Bopp. Apr., 1911.
127. Breeding and feeding sheep: Six breeds, six years. By J. W. Wilson. May, 1911.
128. Progress in wheat investigations. By Clifford Willis and W. L. Burlison. May, 1911.
129. Growing pedigreed sugar beet seed in South Dakota, 1910. By J. H. Shepard. June, 1911.
130. Some new fruits originated from the native sand cherry and plum in the department of horticulture. By N. E. Hansen. June, 1911.
131. Scabies (mange) in cattle. By E. L. Moore. June, 1911.
132. Effects of alkali water on dairy products. By Christian Larsen, William White, and D. E. Bailey. Jan., 1912.
133. Alfalfa as a field crop in South Dakota. By A. N. Hume and Samuel Garver. Feb., 1912.
134. More winter dairying in South Dakota. By Christian Larsen. Mar., 1912.
135. Trials with millets and sorghums for grain and hay in South Dakota. By A. N. Hume and Manley Champlin. Mar., 1912.
136. Fattening pigs. By J. W. Wilson. Apr., 1912.
137. Corn silage and roots for steers. By J. W. Wilson. May, 1912.
138. Hog cholera. By E. L. Moore and T. B. Kelly. June, 1912.
139. Soil and crop and their relation to State building. By A. N. Hume. Aug., 1912.

140. Selection and preparation of seed potatoes in the season of 1912. By A. N. Hume and Manley Champlin. Jan., 1913.
141. Cooperative tests of alfalfa from Siberia and European Russia. By N. E. Hansen. Jan., 1913.
142. Sugar beet culture in South Dakota: Results to date. By J. H. Shepard. Jan., 1913.
143. Roughage for fattening lambs. By J. W. Wilson. Apr. 1913.
144. Preliminary report on the milking machine. By Christian Larsen, William White, and J. W. Fuller. June, 1913.
145. A report of progress in soil fertility investigations. By J. G. Hutton. June, 1913.
146. Some varieties and strains of wheat and their yields in South Dakota. By A. N. Hume and Manley Champlin. Nov., 1913.
147. Effect of alkali water on dairy cows. By Christian Larsen and D. F. Bailey. Dec., 1913.
148. Corn silage and mill products for steers. By J. W. Wilson.—Chemical analysis of feeds. By G. E. Youngberg. Jan., 1914.
149. Some varieties and strains of oats and their yields in South Dakota. By A. N. Hume and Manley Champlin. Mar., 1914.
150. Weeds. H. S. Coe. Apr., 1914.
151. Trials with sweet clover as a field crop in South Dakota. By A. N. Hume and Manley Champlin. Aug., 1914.
152. Testing and handling dairy products. By Christian Larsen and J. M. Fuller. Aug., 1914.
153. Selecting and breeding corn for protein and oil in South Dakota. By A. N. Hume, Manley Champlin, and Howard Loomis. Aug., 1914.
154. The pit silo. By Christian Larsen. Nov., 1914.
155. Selection and preparation of seed potatoes: Size of seed piece and bud variation. By A. N. Hume and I. S. Oakland. Nov., 1914.
156. Kaoliang, a new dry land crop. By A. N. Hume and Manley Champlin. Nov., 1914.
157. Rape pasture for pigs in cornfield; kaoliang and alfalfa hay for pigs. By J. W. Wilson. Dec., 1914.
158. Proso and kaoliang as table foods: History and milling. By N. E. Hansen.—Cooking recipes by the department of home economics. By Nola K. Fromme. Mar., 1915.
159. Progress in plant breeding: New fruits (plum, sand cherry, crab apple, raspberry); a new rose; pears immune to blight; a field method of hybridizing alfalfa. By N. E. Hansen. Apr., 1915.
160. Silage and grains for steers. By J. W. Wilson. May, 1915.
161. Winter grain in South Dakota. By A. N. Hume, Manley Champlin, and J. D. Morrison. Aug., 1915.
162. First annual report of Vivian Experiment and Demonstration Farm. By A. N. Hume, Manley Champlin, and J. G. Hutton. Oct., 1915.
163. Comparative yields of hay, from several varieties and strains of alfalfa, at Brookings, Highmore, Cottonwood, and Eureka. By A. N. Hume and Manley Champlin. Jan., 1916.
164. Making butter and cheese on the farm. By Christian Larsen and V. R. Jones. Feb., 1916.
165. Corn silage for lambs. By J. W. Wilson. Apr., 1916.
166. Important factors affecting machine milking. By Christian Larsen. June, 1916.
167. Transplanting alfalfa. By N. E. Hansen. June, 1916.
168. Breakfast foods and their relative value; principles of nutrition. By G. E. Youngberg. June, 1916.
169. Flax culture in South Dakota. By A. N. Hume, Manley Champlin, and John Martin. Nov., 1916.
170. Characteristics of quack grass (*Agropyron repens*) and western wheat grass (*Agropyron occidentale* Scribn.), with special emphasis on the eradication of quack grass. By A. N. Hume and S. L. Sloan. Dec., 1916.
171. Pasteurization of cream. By Christian Larsen [and others]. Nov., 1916.
172 Grasshoppers and their control. By H. C. Severin and G. I. Gilbertson. Feb., 1917.
173. Sugar beets in South Dakota: Data for four more years. By J. H. Shepard and R. C. Sherwood. Feb., 1917.
174. Sorghums for forage in South Dakota. By Manley Champlin and George Winright. Mar., 1917.
175. The role of water in a dairy cow's ration. By Christian Larsen, E. H. Hungerford, and D. E. Bailey. Apr., 1917.
176. Potato culture in South Dakota. By Manley Champlin and George Winright. Dec., 1917.
177. The sheep. By J. W. Wilson and B. L. Thompson.—Tapeworms in sheep. By E. L. Moore. Mar., 1918.
178. Injurious corn insects. By H. C. Severin. Mar , 1918.
179. Emmer in South Dakota. By Manley Champlin and J. D. Morrison. Mar., 1918.
180. Root crop culture in South Dakota. By Manley Champlin and George Winright.—Sugar beets and other roots as stock feed. By J. H. Shepard. Mar., 1918.
181. Corn culture in South Dakota. By Manley Champlin and George Winright. Mar., 1918.
182. Corn silage for beef production. By J. W. Wilson and B. L. Thompson. Aug., 1918.
183. Barley culture in South Dakota. By Manley Champlin, J. D. Morrison, and John Martin. Jan., 1919.
184. Yields from two systems of corn breeding. By A. N. Hume. Jan., 1919.
185. Ice on the farm. By Christian Larsen. Apr., 1919.
186. Corn families of South Dakota. By A. N. Hume. Aug., 1919.
187. The influence of length of wheat heads on resulting crops: The correlation between the length of parent head and yield of progeny in successive generations of bluestem wheat. By A. N. Hume, Manley Champlin, and Matthew Fowlds. Dec., 1919.
188. Relative values of feed proteins for dairy cows. By Christian Larsen [and others]. Mar., 1920.
189. Corn and millet silage for fattening cattle. By J. W. Wilson and A. H. Kuhlman. June, 1920.
190. The webspinning sawfly of plums and sandcherries, *Neurotoma inconspicua* (Norton) MacGillivray, order Hymenoptera, family Pamphiliidae. By H. C. Severin. Sept., 1920.
191. Water as a limiting factor in the growth of sweet clover (*M[elilotus] alba*). By A. N. Hume, Howard Loomis, and J. G. Hutton. July, 1920.

INDEXES.

Index to Bulletins Nos. 1–163. By Edith J. Hubbart. May, 1916.

TENNESSEE.

Tennessee Agricultural Experiment Station, Knoxville.[15]

BULLETINS.

[1.] Vol. I, No. 1. History and reorganization. By C. W. Dabney.—Dehorning cattle. By C. S. Plumb. Apr., 1888.

[15] An agricultural experiment station was organized as a department of the University in 1882. Previous to the reorganization of the station in 1887, Bulletins 1–8, 1883–1886, were published.

[2.] Vol. I, No. 2. The experiment station, building, and laboratories. By C. W. Dabney.—Germination of seed corn. By C. S. Plumb.—Analyses of commercial fertilizers, season of 1887–1888. July, 1888.
[3.] Vol. I, No. 3. Weeds of the farm. By F. Lamson-Scribner and C. L. Newman. Oct., 1888.
[4.] Vol. II, No. 1. Notes on fertilizers and fertilizing materials. By W. E. Stone. Jan., 1889.
[5.] Vol. II, No.2. Diseases of the Irish potato. By F. Lamson-Scribner. Apr. 1889.
[6.] Vol. II, No. 3. Cottonseed hulls and meal a food for livestock. By W. E. Stone. July, 1889.
[7.] Vol. 2, No. 4. Grasses of mountain meadows and deer parks. By F. Lamson-Scribner.—Chemical composition of strawberries. By W. E. Stone.—Tests of varieties of strawberries. By C. S. Plumb. Oct., 1889.
[8.] Vol. III, No. 1. Experiments in growing potatoes. By C. S. Plumb. Jan., 1890.
[9.] Vol. III, No. 2. Tests of varieties of barley, corn, oats, wheat, and sorghum: methods of culture of wheat, and effects of fertilizers on oats and on clover. By C. S. Plumb. Apr., 1890.
[10.] Vol III, No 3. Points about country roads. By W W. Carson. July, 1890.
[11.] Vol. III, No. 4. Practical experiments in reclaiming "galled" or washed lands with notes on mulch and mulch materials. By P. F. Kefauver. Oct., 1890.
[12.] Vol. III, No. 5. Fruit trees at the experiment station. By R. L. Watts. Dec., 1890.
[13.] Vol. III, No. 6. Index to Volumes I, II, and III. Dec., 1890.
[14.] Vol. IV, No. 1. Crab-grass hay. By C. W. Dabney, jr.—Sorghum as a forage plant. By P. F. Kefauver.—Test of feed value of first and second crops of clover. By C. S. Plumb.—Pasture grasses. By F. Lamson-Scribner.—Black knot of the plum and cherry.—Pruning fruit trees. By R. L. Watts.—The glassy-winged soldier-bug. By H. E. Summers.—Diseases of live stock. By W. B. Niles.—Experiment station record: [Abstracts of Bulletins, Vol. I, No. 1, to Vol. III, No. 6]. Jan., 1891.
[15.] Vol. IV, No. 2. The peanut crop of Tennessee: Statistics, culture, and chemistry. By L. P. Brown. Apr., 1891.
[16.] Vol. IV, No. 3. The true bugs, or Heteroptera, of Tennessee. By H. E. Summers. July, 1891.
[17.] Vol. IV, No. 4. Some fungous diseases of the grape. By F. Lamson-Scribner. Oct., 1891.
[18.] Vol. IV, No. 5. A chemical study of the cotton plant. By J. B. McBryde. Dec., 1891.
[19.] Vol. V, No. 1. Fruit trees and experiments with vegetables. By R. L. Watts. Jan., 1892.
[20.] Vol. V, No. 2. Grasses of Tennessee, I. By F. Lamson-Scribner. Apr., 1892.
[21.] Vol. V, No. 3. A contribution to the study of economics of milk production. By C. F. Vanderford. July, 1892.
[22.] Vol. V, No. 4. Experiments with fruit trees and vegetables. By R. L. Watts. Nov., 1892.
[23.] Vol. VI, No. 1. Some injurious insects of the apple. By C. E. Chambliss. Jan., 1893.
[24.] Vol. VI, No. 2. Rational use of feeding stuffs; winter dairying in Tennessee. By C. F. Vanderford. Apr., 1893.
[25.] Vol. VI, No. 3. Small fruits; Strawberries, raspberries, blackberries, grapes. By R. L. Watts. July, 1893.
[26.] Vol. VI, No. 4. Field experiments with tomatoes and onions. By R. L. Watts.—The boll-worm, corn-worm, or tomato fruit worm. By C. E. Chambliss. Oct., 1893.
[27.] Vol. VII, No. 1. Grasses of Tennessee, II. By F. Lamson-Scribner. Jan., 1894.
[28.] Vol. VII, No. 2. Fruits: Grapes, strawberries, raspberries, blackberries, pears, apples, and peaches. R. L. Watts. Oct., 1894.
[29.] Vol. VII, No. 3. Cooperative experimentation. Dec., 1894.
[30.] Vol. VII, No. 4. Dehorning cattle.—Notes to correspondents. Dec., 1894.
[31.] Vol. VIII, No. 1. Spraying apparatus. By R. L. Watts.—Insecticides. By C. E. Chambliss.—Fungicides; spraying calendar. By S. M. Bain. Apr., 1895.
[32.] Vol. VIII, No. 2. The wild onion. By R. L. Watts. July, 1895.
[33.] Vol. VIII, No. 3. Some experiments with fungicides on peach foliage. By S. M. Bain. Oct., 1895.
[34.] Vol. VIII, No. 4. The chinch bug *Blissus leucopterus* (Say). By C. E. Chambliss. Dec., 1895.
[35.] Vol. IX, No. 1. Apples of Tennessee origin. [First report.] By R. L. Watts. May, 1896.
[36.] Vol. IX, No. 2. Strawberries. By R. L. Watts. July, 1896.
[37.] Vol. IX, No. 3. A contribution to the study of southern feeding stuffs. By J. B. McBryde. Sept., 1896.
[38.] Vol. IX, No. 4. Varieties of grapes. By R. L. Watts. Dec., 1896.
[39.] Vol. X, No. 1. Apples of Tennessee origin (second report). By R. L. Watts. Jan., 1897.
[40.] Vol. X, No. 2. Pot culture of lettuce. By R. L. Watts. June, 1897.
[41.] Vol. X, No. 3. The soils of Tennessee. By C. F. Vanderford. Sept., 1897.
[42.] Vol. X, No. 4. Scale insects: San José and other species. By C. E. Chambliss. Dec., 1897.
[43.] Vol. XI, No. 1. Persimmons. By R. L. Watts.—Notes on the chemistry of the persimmon. By J. B. McBryde. Apr., 1899.
[44.] Vol. XI, No. 2. Grasses and forage plants: I, Domesticated grasses. By J. B. Killebrew. June, 1898.
[45.] Vol. XI, No. 3. Grasses and forage plants: II, Leguminous plants. By J. B. Killebrew. Sept., 1898.
[46.] Vol. XI, No. 4. Grasses and forage plants: III, Meadows and wild pastures. By J. B. Killebrew. Dec., 1898.
[47–50.] Vol. XII, Nos. 1–4. Stock interests: Dairy farming. By A. M. Soule.—Effect of churning on fat globules. By G. A. Flickinger.—Soil and fertilizers: Soil studies; principles of plowing; root systems of farm crops. By A. M. Soule.—Some principles in the use of fertilizers; fertilizer experiments with corn on washed lands; cooperative experiments with fertilizers. By C. A. Mooers.—Horticultural work: The renovation of unproductive orchards; why are old orchards unproductive? By C. A. Keffer.—Fertilizers for the orchard. By C. A. Mooers.—Onions. By R. H. Garrahan.—Forage: The utility of the cowpea; why grasses fail. By A. M. Soule.—Notes on grasses. By J. R. Fain.—Seed selection. By P. O. Vanatter. 1900. Vol. XII, Nos. 1–4, bound with annual report; not separately issued.
[51.] Vol. XIII, No. 1. Frost protection; climate of Tennessee. By W. M. Fulton. Jan., 1900.
[52.] Vol. XIII, No. 2. Experiments with winter wheat. By A. M. Soule and P. O. Vanatter. July, 1900.
[53.] Vol. XIII, No. 3. Fertilizer experiments on potatoes, corn, cowpeas, peanuts, and effects of fertilizers on the germination of seeds. By C. A. Mooers. Oct., 1900.
[54.] Vol. XIII, No. 4. Feeding native steers. By A. M. Soule and J. R. Fain. Dec., 1900.
[55.] Vol. XIV, No. 1. Experiments with corn, forage crops, and spring cereals. By A. M. Soule, P. O. Vanatter, and J. R. Fain. June, 1901.
[56.] Vol. XIV, No. 2. Winter wheat. By A. M. Soule and P. O. Vanatter. July, 1901.
[57.] Vol. XIV, No. 3. Winter cereals and legumes. By A. M. Soule and P. O. Vanatter. Sept., 1901.
[58.] Vol. XIV, No. 4. The early growth and training of apple trees. By C. A. Keffer. Dec., 1901.
[59.] Vol. XV, No. 1. The value of corn, skim milk, and whey for fattening swine. By A. M. Soule and J. R. Fain. Jan., 1902.
[60.] Vol. XV, No. 2. The action of copper on leaves with special reference to the injurious effects of fungicides on peach foliage: A physiological investigation. By S. M. Bain. Apr., 1902.

[61.] Vol. XV, No. 3. Feeding native steers. By A. M. Soule and J. R. Fain. July, 1902.
[62.] Vol. XV, No. 4. The relative value of protein in cotton seed meal, cowpea hay, and wheat bran. By A. M. Soule and S. E. Barnes. Oct., 1902.
[63.] Vol. XVI, No. 1. Fertilizer experiments. By C. A. Mooers. Jan., 1903.
[64.] Vol. XVI, No. 2. San José scale. By C. A. Keffer. Apr., 1903.
[65.] Vol. XVI, No. 3. Corn, wheat, and soy bean meal with skim milk for pork production. By A. M. Soule and J. R. Fain. July, 1903.
[66.] Vol. XVI, No. 4. Influence of climate and soil on the composition and milling qualities of winter wheat. By A. M. Soule and P. O. Vanatter. Oct., 1903.
[67.] Vol. XVII, No. 1. Crops for the silo. By A. M. Soule and J. R. Fain. Jan., 1904.
[68.] Vol. XVII, No. 2. Increasing the yield of corn. By A. M. Soule and P. O. Vanatter. Apr., 1904.
[69.] Vol. XVII, No. 3. Training and pruning fruit trees and vines. By C. A. Keffer. July, 1904.
[70.] Vol. XVII, No. 4. Replacing grain with alfalfa in a ration for dairy cows. By A. M. Soule and S. E. Barnes. Oct., 1904.
[71.] Vol. XVIII, No. 1. Texas fever cattle tick; pasture methods of eradication. By H. A. Morgan. Jan., 1905.
[72.] Vol. XVIII, No. 2. Small fruits and grapes. By C. A. Keffer. Sept., 1905.
[73.] Vol. XVIII, No. 3. Alsike clover; effects sometimes produced on horses and mules pastured exclusively upon alsike. By H. A. Morgan and Moses Jacob. Dec., 1905.
[74.] Vol. XVIII, No. 4. The control of insects, fungi, and other pests. By B. M. Bentley. Dec., 1905. See 106.
75. (Vol. XIX, No. 1.) Selection for disease-resistant clover: A preliminary report. By S. M. Bain and S. H. Essary. Dec., 1906.
76. (Vol. XIX, No. 2.) The San José and other injurious scale insects of Tennessee with methods for their control. By G. M. Bentley. Dec., 1906. See 98.
77. (Vol. XIX, No. 3.) The fruiting habit of the grape. By C. A. Keffer. Dec., 1906.
78. (Vol. XIX, No. 4.) The soils of Tennessee; their chemical composition and fertilizer requirements. By C. A. Mooers. Dec., 1906.
79. The relation of steer feeding to farm economics. By F. C. Quereau. June, 1908.
80. Home-grown rations in economical production of milk and butter. By J. N. Price. June, 1908.
81. Tick eradication: The life history and habits of the North American fever tick with special reference to eradication. By E. C. Cotton. Dec., 1908.
82. The soy bean: A comparison with the cowpea. By C. A. Mooers. Dec., 1908.
83. Comparison and improvement of diary herds in Tennessee. By S. E. Barnes. Mar., 1909.
84. Sheep and lambs in Tennessee: A preliminary report. By F. C. Quereau. Mar., 1909.
85. Prevention of hog cholera: A preliminary report. By Moses Jacob. Mar., 1909.
86. Experiments with soils, fertilizers, and farm crops. By C. A. Mooers. Apr., 1909.
87. The relation of the weather service to the farmers of Tennessee. By J. F. Voorhees. Jan., 1910.
88. Insuring the peach crop. By C. A. Keffer. Apr., 1910.
89. Stand and soil fertility as factors in the testing of varieties of corn. By C. A. Mooers. July, 1910.
90. Fertility experiments in a rotation of cowpeas and wheat: The utilization of various phosphates. By C. A. Mooers. Dec., 1910.
91. Relation of temperature and rainfall to crop systems and production. By J. F. Voorhees. Jan., 1911.
92. Experiments with fertilizers and field crops on important soil types of middle Tennessee. By C. A. Mooers.—Method of growing Irish potatoes. By W. N. Rudd. June, 1911.
93. Tobacco insects of Tennessee. By A. C. Morgan.—Tobacco culture in Montgomery County. By L. R. Neel. June, 1911.
94. The cattle tick as affected by climate: Life-history investigations. By E. C. Cotton.—Relation of climate to life-history. By J. F. Voorhees. Oct., 1911.
95. Notes on tomato diseases with results of selection for resistance. By S. H. Essary. Jan., 1912.
96. Fertility experiments in a rotation of cowpeas and wheat: The effect of liming on the crop production. By C. A. Mooers.—The effect of liming and of green manuring on the soil content of nitrogen and humus. By C. A. Mooers, H. H. Hampton, and W. K. Hunter. Apr., 1912.
97. Liming for Tennessee soils. By C. A. Mooers. Jan., 1913.
98. The San José scale in Tennessee with methods for its control. By G. M. Bentley. Apr., 1913. A revision of 76.
99. Suggestions on preparation and use of spray formulas. By G. N. Bentley. Apr., 1913.
100. Soil carbonates, a new method of determination. By W. H. MacIntire and L. G. Willis. Sept., 1913.
101. The rational improvement of Cumberland Plateau soils: Conclusions from six years of field experiments with various farm crops. By C. A. Mooers. Oct., 1913.
102. The rational improvement of Highland rim soils: Conclusions from six years of field experiments with various farm crops. By C. A. Mooers. Jan., 1914.
103. The influence of ammonium carbonate upon the determination of humus, a rapid and efficient filtration procedure. By W. H. MacIntire and J. I. Hardy. Jan., 1914.
104. Feeding beef cattle: Conclusions from four years of experiments at the West Tennessee Experiment Station. By C. A. Willson and S. A. Robert. Apr. 1914.
105. The Tennessee wooden-hoop silo. By C. A. Willson. Apr., 1914.
106. Suggestions for the control of injurious insects and plant diseases. By G. M. Bentley. June, 1914. See 117.
107. The non-existence of magnesium carbonate in humid soils. By W. H. MacIntire, L. G. Willis, and J. I. Hardy. June, 1914.
108. Summer pruning the peach. By C. A. Keffer. June, 1914.
109. Fertility and crop experiments at the West Tennessee Station. By C. A. Mooers and S. A. Robert. Sept., 1914.
110. A survey of sheep and lamb production in 1914. By R. M. Murphy. Oct., 1914.
111. Two equipments for investigation of soil leachings: A pit equipment. By C. A. Mooers.—A hillside equipment. By W. H. MacIntire. Jan., 1915.
112. The small grains in Tennessee. By C. A. Mooers. Jan., 1915.
113. The North American fever tick (*Boophilus annulatus* Say): Notes on life-history. By E. C. Cotton. Mar., 1915.
114. Relation of steer feeding to farm returns. By C. A. Willson. Dec., 1915.
115. Factors influencing the lime and magnesia requirements of soils: A method for the determination of the immediate lime requirements. By W. H. MacIntire. Jan., 1916.
116. How to feed livestock successfully. By C. A. Willson. Dec., 1916.
117. Suggestions for the control of injurious insects and plant diseases. By G. M. Bentley. March, 1917. A revision of 106.

118. A comparative study of the nitrogen economy of certain Tennessee soils. By C. A. Mooers Apr., 1917.
119. Ground limestone and prosperity on the farm. By C. A. Mooers. Dec., 1917.
120. The hog louse (*Haematopinus suis* (Linnaeus) Leach). By H. R. Watts. July, 1918.
121. Pruning and spraying the home orchard and vineyard. By G. M. Bentley. Dec., 1918.
122. A comparison of azotobacter with yeasts. By Maurice Mulvania. Apr., 1919.

SPECIAL BULLETINS.

A. The army worm: How to prevent its ravages on cotton. Aug., 1889. Second edition, Sept. 1, 1889.
B. Analyses of commercial fertilizers. By W. E. Stone. Oct., 1889.
C. Treatment of certain fungous diseases of plants. By F. Lamson-Scribner. May, 1890.
D. Potash and paying crops [compiled by A. de Ghequier]. July, 1890. Identical with Maryland Sta. Bul. [B]; Georgia Sta. Bul. 9; West Virginia Sta. Spec. Bul., [1].
E. The cotton worm; the Hessian fly. By H. E. Summers. July, 1890.

TEXAS.

Texas Agricultural Experiment Station, College Station.

BULLETINS.

1. Plan of organization. [1888].
2. Experiments started: Experiments in cattle feeding; analyses of fertilizers and ores; horticultural department; meteorological department. By F. A. Gulley [and others]. May, 1888.
3. Grasses and other forage plants. By T. L. Brunk. Oct., 1888.
4. Root rot of cotton or "cotton blight." By L. H. Pammel. Dec., 1888.
5. Creameries in Texas. By F. A. Gulley and G. W. Curtis. Mar., 1889.
6. Feeding experiment. By F. A. Gulley and H. H. Harrington. June, 1889.
7. Cotton root-rot. By L. H. Pammel. Nov., 1889.
8. Work in horticulture. By T. L. Brunk. Dec., 1889.
9. Pear stocks. By T. L. Brunk.—Some parasitic fungi of Texas. By H. S. Jennings. May, 1890.
10. Feeding experiment. By F. A. Gulley and J. W. Carson. May, 1890.
11. Effect of cottonseed and cottonseed meal on butter product; quality of sweet cream butter as compared with butter made from acid cream. By G. W. Curtis. Aug., 1890.
12. The screw-worm. By Mark Francis. Sept., 1890.
13. Sorghum: Value as a feedstuff; effect on soil; teosinte; Analyses of different stages of growth. Miscellaneous analyses. By H. H. Harrington, Duncan Adriance, and P. S. Tilson. Dec., 1890.
14. Effect of cottonseed and cottonseed meal in the dairy ration on gravity and centrifugal creaming of milk. By G. W. Curtis and J. M. Carson. Mar., 1891.
15. Influence of climate on the composition of corn; digestibility of southern foodstuffs (cottonseed hulls, corn fodder); ash analyses; roasted cottonseed. By H. H. Harrington. May, 1891.
16. Work in horticulture: Drainage experiments; Russian fruits and ornamental trees; list of fruits on trial; forest trees successful to date. By S. A. Beach. June, 1891.
17. General information relating to the Texas Agricultural Experiment Station. By G. W. Curtis. Aug., 1891.
18. Liver flukes: The common fluke (*Distomum hepaticum*); a new species (*Distomum texanicum*). By Mark Francis. Oct., 1891.
19. Corn fodder, methods of saving, cost, digestibility, and value. By G. W. Curtis. Dec., 1891.
20. Grasses and forage plants, a study of composition and value; Texas grains—composition; ash analyses, grasses and grains. By H. H. Harrington. Mar., 1892.
21. Effect of cottonseed and cottonseed meal in feeding hogs. By G. W. Curtis and J. W. Carson. June, 1892.
22. Alfalfa root-rot. By G. W. Curtis. Sept., 1892.
23. Black rot of the grape: Life history, treatment. (*Physalospora bidwellii* Sachs.) By R. H. Price. Nov., 1892.
24. The cattle tick (*Boophilus bovis* Riley sp.): Biology. By Cooper Curtice.—Preventive measures. By Mark Francis. Dec., 1892.
25. Texas soils: A study of chemical composition. By H. H. Harrington. Dec., 1892.
26. Cost of cotton production and profit per acre. By G. W. Curtis and J. W. Carson. Mar., 1893.
27. Steer feeding. By J. H. Connell and J. W. Carson.—List of publications to date. June, 1893.
28. Sweet potatoes. By R. H. Price. Dec., 1893.
29. Effects of cotton seed and cottonseed meal on butter, beef tallow, lard, and sheep suet. By H. H. Harrington and Duncan Adriance. Dec., 1893.
30. Veterinary science: Glanders experiments; tuberculine experiments; lumpy jaw of cattle; notes on parasites; Texas fever experiments; device for destroying ticks. By Mark Francis. Mar., 1894.
31. Insects injurious to stored grain. By R. H. Price. June, 1894.
32. Varieties of plums; injurious fungi and insects; varieties of apricots; varieties of Japan persimmons. By R. H. Price. Sept., 1894.
33. Feeding milk cows: Four feeding experiments. By J. H. Connell and James Clayton. Dec., 1894.
34. Field experiments at McKinney substation and Wichita Falls substation with wheat, corn, cotton, grasses, and manures; field experiments at College Station with corn, cotton, grasses, peas, and manures. By J. H. Connell and James Clayton. Feb., 1895. See 45.
35. Miscellaneous analyses. By Duncan Adriance, P. S. Tilson, and H. H. Harrington. May, 1895.
36. Vegetables: Sweet potatoes. By R. H. Price.—Water and sugar in sweet potatoes, as influenced by keeping. By H. H. Harrington.—Varieties of onions; muskmelons and cantalopes, varieties and culture; celery; varieties of beans. By R. H. Price.—Varieties of cabbage, cauliflower and tomatoes. By Helge Ness.—Insecticides. By R. H. Price. Aug., 1895.
37. Sundry brief articles compiled from "Press Notes" published during the years 1894 and 1895. By J. H. Connell [and others]. Dec., 1895.
38. Cañaigre, the new tanning plant. By H. H. Harrington and Duncan Adriance. Mar., 1896.
39. The peach. By R. H. Price. July, 1896.
40. Field experiments at College Station with corn, cotton, and forage plants. By J. H. Connell and James Clayton. Sept., 1896.
41. Steer feeding. By J. H. Connell and J. W. Carson. Dec., 1896.
42. The Irish potato [first report]. By R. H. Price. Mar., 1897. See 54.
43. Report from Beeville station: Soils; climate: water supply; irrigation equipment. By J. H. Connell and S. A. McHenry. Apr., 1897.
44. Paints and painting materials and miscellaneous analyses. By H. H. Harrington and P. S. Tilson. July, 1897.

45. Cotton experiments—fertilizers, varieties, distance; corn experiments. By B. C. Pittuck. Dec., 1897. Partial reprint of 34.
46. Grasses and forage plants. By B. C. Pittuck. 1898.
47. The effect of food on economic dairy production. By A. M. Soule. 1898.
48. The grape. By R. H. Price and Helge Ness. 1898.
49. Corn experiments: College station—varieties; Beeville station—varieties; methods of planting. By B. C. Pittuck.—Best varieties of corn. By J. H. Connell and B. C. Pittuck. Dec., 1898.
50. Cotton experiments: College station: Varieties: fertilizers. By B. C. Pittuck.—Beeville, Texas: Varieties, varieties and distance. By B. C. Pittuck and S. A. McHenry. Feb., 1899.
51. Fertilizer and fertilizer analyses, with the new law controlling the sale of fertilizers and poisonous insecticides in the State. By H. H. Harrington. May, 1899.
52. Report of Beeville station on cabbage and cauliflower. By B. C. Pittuck and S. A. McHenry. July, 1899.
53. Texas fever. By Mark Francis and J. W. Connaway. Oct., 1899. See 111.
54. The Irish potato [second report]. By R. H. Price and Helge Ness. Nov., 1899. Partial reprint of 42.
55. Feeding steers; feed value of cotton seed and its products. By J. H. Connell and H. C. Kyle. Dec. 1899.
56. Investigation and improvement of American grapes at the Munson experiment grounds near Denison, Texas, from 1876 to 1900. By T. V. Munson. Nov., 1899.
57. Report of Beeville station: Cabbage—fertilizers, varieties, shipping; cauliflower—varieties, shipping. By B. C. Pittuck and S. A. McHenry. July, 1900.
58. Pruning and training peach orchards. By R. H. Price. Dec., 1900. See 80.
59. Forage crops: Reports of cooperating stockmen and farmers from 71 counties. Mar., 1901.
60. Two methods of growing onions. By B. C. Pittuck and S. A. McHenry. June, 1901.
61. Willis and Huntsville tobacco soils. By H. H. Harrington and P. S. Tilson. Oct., 1901.
62. The fig. By R. H. Price and E. A. White. Dec., 1901.
63. Texas fever [second report]. By Mark Francis. Jan., 1902. See 111.
64. Insect pests attacking truck crops. By F. W. Mally. Apr., 1902.
65. The tomato. By E. J. Kyle and E. C. Green. Jan., 1903.
66. Alfalfa, peanuts, velvet beans, millet, rape. By B. C. Pittuck. May, 1903.
67. Commercial fertilizers and commercial poisonous insecticides. By H. H. Harrington. July, 1903.
68. The manufacture of cane sirup. By H. H. Harrington. July, 1903.
69. Cabbage—varieties, fertilizers. By B. C. Pittuck and S. A. McHenry. July, 1903.
70. The composition of Texas cottonseed meal. By H. H. Harrington and G. S. Fraps. Mar., 1904.
71. Irish potatoes: Results of experiments at Troupe substation, Smith County. By E. C. Green. Apr., 1904.
72. Strawberries at Troupe station. By E. C. Green. July, 1904.
73. The composition of rice by-products. By G. S. Fraps. July, 1904. See 191.
74. Insects mistaken for the Mexican cotton boll weevil. By E. D. Sanderson. Sept., 1904.
75. Cotton investigations of the Bureau of Plant Industry, U. S. Department of Agriculture and the Texas Experiment Station: Early cottons. By R. L. Bennett. Oct., 1904.
76. Experiments in steer feeding. By J. A. Craig and F. R. Marshall. Nov., 1904.
77. Onions and bunch crops at Beeville: Onions, beets, radishes, lettuce, carrots and turnips. By J. K. Robertson and E. C. Green. Dec., 1904.
78. Feeding fermented cottonseed meal to hogs. By F. R. Marshall. Oct., 1905.
79. Cotton breeding of the Bureau of Plant Industry, U. S. Department of Agriculture and the Texas Station: Breeding an early, rapid fruiting and productive cotton. By R. L. Bennett. Oct., 1905.
80. Peach growing in Texas. By E. J. Kyle. Dec., 1905. Supersedes 58.
81. Alfalfa seed testing. By O. M. Ball. Dec., 1905.
82. Maintaining the fertility of rice soils. A chemical study. By G. S. Fraps. Jan., 1906.
83. Nitro-culture. By O. M. Ball. Jan., 1906.
84. Tomato fertilizers at Troupe. By W. S. Hotchkiss and E. C. Green. Jan., 1906.
85. Commercial fertilizers in 1905–6. By G. S. Fraps. June, 1906.
86. Cattle feeding experiments: Molasses for fattening cattle; rough rice as a steer feed: profits from different systems of feeding cattle. By J. A. Craig and F. R. Marshall. Sept., 1906.
87. The San José scale. By A. F. Conradi. [Nov., 1906].
88. Length of life of vines of various species and varieties of grapes, profitableness, and by what diseases seriously affected. By T. V. Munson. June, 1906.
89. Insects of the garden. By A. F. Conradi.—The melon louse and other aphids. By C. E. Sanborn. [Dec., 1906].
90. The feed control in 1905–6. By J. W. Carson and G. S. Fraps. Sept., 1906.
91. Food adulteration in Texas. By G. S. Fraps. Oct., 1906.
92. A test of the producing power of some Texas seed corn. By R. L. Bennett. Dec., 1906.
93. The sweet potato borer. By A. F. Conradi. [1907.]
94. Horticultural survey of Gulf Coast. By E. C. Green. Mar., 1907.
95. Information regarding the new feed law. By J. W. Carson and G. S. Fraps. May, 1907.
96. Commercial fertilizers and poisonous insecticides in 1906–7. By G. S. Fraps. July, 1907.
97. Kaffir corn and milo maize for fattening cattle. By F. R. Marshall and J. C. Burns. June, 1907.
98. Summary [of] Texas Bulletin Nos. 1 to 94, inclusive. Aug., 1907.
99 The composition and properties of some Texas soils. By G. S. Fraps. Dec., 1907.
100. The chemical composition of some Texas soils. By G. S. Fraps. Dec., 1907. A popular edition of 99.
101. Irish potato fertilizer experiments. By W. S. Hotchkiss and E. J. Kyle. Jan., 1908.
102. Texas honey plants. By C. E. Sanborn and E. E. Scholl. Jan., 1908.
103. Forage crops in northwest Texas. By A. B. Conner. [1908.]
104. Digestion experiments. By G. S. Fraps. Apr., 1908.
105. Notes on forest and ornamental trees on the grounds of the Agricultural and Mechanical College of Texas. By Helge Ness. June, 1908.
106. The production of active nitrogen in the soil. By G. S. Fraps. July, 1908.
107. Commercial fertilizers and poisonous insecticides in 1907–8. By G. S. Fraps. July, 1908.
108. Winter bur clover. By W. C. Welborn. Aug., 1908.
109. The estimation of cotton seedhulls in cottonseed meal. By G. S. Fraps. Aug., 1908.
109. Alfalfa. By O. M. Ball. Sept., 1908.
110. Steer feeding experiments: Kaffir corn, milo maize and molasses compared with Indian corn for fattening cattle: cottonseed compared with cottonseed meal as a supplement to kaffir corn for fattening cattle. By J. C. Burns. Sept., 1908.
111. Texas fever (third report). By Mark Francis. Sept., 1908. A restatement of essential facts from 53, 63.

112. Nature and use of commercial fertilizers. By G. S. Fraps. Sept., 1908.
113. Spray calendar. By C. E. Sanborn. Aug., 1908.
113. [i. e. 114]. Composition of white lead and paints. By G. S. Fraps. Nov., 1908.
115. Fertilizer test with onions at the Beeville State Experiment Station. By S. A. Waschka. Oct., 1908.
116. The foul brood of bees and the foul brood law. By G. W. Herrick and E. E. Scholl. Dec., 1908.
117. Commercial feeding stuffs in 1907-8. By J. W. Carson and G. S. Fraps. Nov., 1908.
118. Report of progress with citrus fruits at the Beeville substation, Bee County. By S. A. Waschka. Feb., 1909.
119. Infectious anaemia of the horse. By Mark Francis and R. P. Marsteller. Dec., 1908.
120. Corn and cotton experiments for 1908. By W. C. Welborn. [1909.]
121. Report of progress at the Troupe substation, Smith County, Texas. By W. H. Hotchkiss. Feb., 1909.
122. The effect of salt water on rice. By G. S. Fraps. June, 1909.
123. Commercial fertilizers and poisonous insecticides in 1908–9. By G. S. Fraps. July, 1909.
124. The pecan case bearer. By G. W. Herrick. Oct., 1909.
125. The chemical composition of some soils of Angelina, Brazoria, Cameron, Cherokee, Delta, Lamar, Hidalgo, Lavaca, Montgomery, Nacogdoches, Robertson, Rusk, Webb, and Wilson Counties. By G. S. Fraps. n. d.
126. Active phosphoric acid and its relation to the needs of the soil for phosphoric acid in pot experiments. By G. S. Fraps. Nov., 1909.
127. Commercial feeding stuffs. By J. W. Carson and G. S. Fraps. March, 1910.
128. Cottonseed meal as human food. By G. S. Fraps. March, 1910.
129. Studies of the ammonia-soluble organic matter of the soil. By G. S. Fraps and N. C. Hammer. June, 1910.
130. Alkali soils, irrigation waters. By G. S. Fraps. June, 1910.
131. Hog feeding experiments. By J. C. Burns. July, 1910.
132. Report of the cooperative forage crop work by the United States Department of Agriculture and the Texas State Experiment Station at Chillicothe, Texas, 1909. By A. B. Conner. 1910.
133. Commercial fertilizers. By G. S. Fraps. Sept., 1910.
134. Report of the director on the establishment of the new State stations. By H. H. Harrington. Nov., 1910.
135. Feeding experiments with steers and hogs. By J. T. Cruss. Nov., 1910.
135. [i. e., 136.] Organic phosphoric acid of the soil. By G. S. Fraps. Feb., 1911.
137. Alfalfa in northwest Texas. By A. B. Conner. [1911?]
138. Cooperative fertilizer experiments with corn, cotton, rice, cauliflower, peanuts, onions, tomatoes and potatoes, 1908–9–10. By G. S. Fraps. Apr., 1911.
139. Electrolysis of humus solutions; an improved method for the estimation of humus. By J. B. Rather. May, 1911.
140. Commercial fertilizers in 1910–1911. By G. S. Fraps. [1911?]
141. Commercial feeding stuffs. By J. W. Carson and G. S. Fraps. July, 1911.
142. Practical information for beginners in beekeeping. By Wilmon Newell. Dec., 1911. See 255.
143. Observations on European agriculture. By G. S. Fraps. Dec., 1911.
144. The culture of cigar leaf tobacco in Texas. By Otto Olson. 1912.
145. The active potash of the soil and its relation to pot experiments. By G. S. Fraps. Jan., 1912.
146. The forms of phosphorus in cottonseed meal. By J. B. Rather. Feb., 1912.
147. Digestion experiments with Texas hays and fodders. By C. S. Fraps. Apr., 1912.
148. Report on experiments with citrus fruits at the Beeville substation. By A. T. Potts. May, 1912.
149. Commercial fertilizers in 1911–1912. By G. S. Fraps. July, 1912.
150. Composition and digestibility of the ether extract of hays and fodders. By G. S. Fraps and J. B. Rather. Aug., 1912.
151. Relation of the total nitrogen of the soil to its needs as shown in pot experiments. By G. S. Fraps. Aug., 1912.
152. The heating of corn chops. By G. S. Fraps. Aug., 1912.
153. A test of the relative values of cottonseed meal and silage, and cottonseed meal and cottonseed hulls for fattening cattle. By J. C. Burns and T. P. Metcalfe. Aug., 1912.
154. Commercial feeding stuffs. By W. L. Boyett and G. S. Fraps. July, 1912.
155. The ether extract and the chloroform extract of soils. By G. S. Fraps and J. B. Rather. Jan., 1913.
156. The phosphorus compounds of cottonseed meal and wheat bran. By J. B. Rather. Mar., 1913.
157. Hog cholera and its prevention. By R. P. Marsteller. Apr., 1913.
158. Investigations pertaining to Texas beekeeping: Experiments in artificial division and swarm control. By Wilmon Newell.—The life history and control of the bee moth or wax worm. By F. B. Paddock.—A statistical study of Texas beekeeping. By W. H. Dean. June, 1913. See 231.
159. Steer feeding: Silage compared with cottonseed hulls, and cottonseed meal compared with cottonseed for fattening cattle; sorghum hay compared with cottonseed hulls for fattening cattle. By J. C. Burns, C. N. Kennedy, and C. S. Scharff. July, 1913.
160. Commercial fertilizers in 1912–13. By G. S. Fraps. July, 1913.
161. The composition of the soils of south Texas. By G. S. Fraps. Sept., 1913.
162. Composition and digestibility of the chloroform extract of hays and fodders. By G. S. Fraps and J. B. Rather. Dec., 1913.
163. Digestion experiments on men with cottonseed meal. By J. B. Rather. Dec., 1913.
164. Commercial feeding stuffs, 1913; feed law. By Bonney Youngblood. Apr., 1914.
165. Ammonia-soluble inorganic soil colloids. By G. S. Fraps. Apr., 1914.
166. Digestion experiments with Texas feeding stuffs. By G. S. Fraps. May, 1914.
167. Commercial fertilizers and their use. By G. S. Fraps. June, 1914.
168. Commercial fertilizers in 1913–14. By G. S. Fraps. July, 1914.
169. The total fatty acids and other ether-soluble constituents of feedstuffs. By J. B. Rather. Sept., 1914.
170. Texas feeding stuffs: Their composition and utilization. By G. S. Fraps. Nov., 1914.
171. Losses of moisture and plant food by percolation. By G. S. Fraps. Dec., 1914.
172. Sudan grass. By Bonney Youngblood and A. B. Conner. Jan., 1915.
173. The composition of the soils of the Texas Panhandle. By G. S. Fraps. Feb., 1915.
174. The effect of organic compounds in pot experiments. By G. S. Fraps. Apr., 1915.
175. Distribution and digestibility of the pentosans of feeds. By G. S. Fraps. May, 1915.
176. Commercial fertilizers in 1914-15. By G. S. Fraps. July, 1915.
177. Commercial feeding stuffs, 1914-15; Texas feed law. By Bonney Youngblood. Sept., 1915.
178. Effect of additions on availability of soil phosphates. By G. S. Fraps. Sept., 1915.
179. The harlequin cabbage bug. By F. B. Paddock. Oct., 1915.
180. The turnip louse. By F. B. Paddock. Oct., 1915.
181. Oxidation of organic compounds in the soil. By G. S. Fraps. Oct., 1915.
182. Steer feeding. By J. C. Burns. Nov., 1915.

183. Moisture relations of some Texas soils. By G. S. Fraps. Dec., 1915.
184. Cooperative fertilizer experiments with corn, 1908-1914. By G. S. Fraps. Jan., 1916.
185. The production coefficients of feeds. By G. S. Fraps. Feb., 1916.
186. Fattening lambs. By J. M. Jones. Mar., 1916.
187. Sprays and spraying. By F. B. Paddock. Mar., 1916.
188. Tile drainage. By A. H. Leidigh and E. C. Gee. Apr., 1916.
189. The composition of cottonseed meal and cottonseed. By G. S. Fraps. June, 1916.
190. The effect of additions on the availability of soil potash, and the preparation of sugar humus. By G. S. Fraps. June, 1916.
191. The composition of rice and its by-products. By G. S. Fraps. June, 1916. Supersedes 73.
192. Soils of Grayson, Lee, McLennan, Titus, and Tyler counties. By G. S. Fraps. Aug., 1916.
193. Commercial fertilizers in 1915-16. By G. S. Fraps. Aug., 1916.
194. Commercial feeding stuffs, 1915-16; Texas feed law. By Bonney Youngblood. Sept., 1916.
195. Japanese sugar cane as a forage crop. By A. H. Leidigh. Aug., 1916.
196. Digestibility of sugars, starches, and pentosans of roughages. By G. S. Fraps. Aug., 1916.
197. Progress report of substation No. 3, Angleton, Texas, 1909-1914. By N. E. Winters. Nov., 1916.
198. Feeding baby beeves. By J. C. Burns. Nov., 1916.
199. Progress report, Texas substation No. 6, Denton, Texas, 1909-1914. By V. L. Cory. Dec., 1916.
200. Progress report, substation No. 4, Beaumont, Texas, 1909-1914. By H. H. Laude. Dec., 1916.
201. Peanut meal and ground whole pressed peanuts for hogs. By L. B. Burk. Dec., 1916.
202. Progress report of substation No. 12, Chillicothe, Texas, 1905-1914. By R. W. Edwards. Dec., 1916.
203. The productive values of some Texas feeding stuffs. By G. S. Fraps. Dec., 1916.
204. The recurving of milo and some factors influencing it. By A. B. Conner and R. E. Karper. Feb., 1917.
205. Sheep breeding and feeding. By J. M. Jones. Jan., 1917.
206. Poultry feeds and feeding results. By R. N. Harvey. Jan., 1917.
207. Poultry houses and poultry equipment for Texas. By R. N. Harvey, J. C. Olsen, F. W. Kazmeier, and T. J. Conway. Jan., 1917.
208. The fig in Texas. By A. T. Potts. Jan., 1917.
209. Progress report, substation No. 2, Troup, Texas, 1901-1914. By W. S. Hotchkiss. Jan., 1917.
210. Barns for work animals. By Bonney Youngblood. Jan., 1917.
211. Field experiments with crown gall, 1913-1917. By Helge Ness. Oct., 1917.
212. The availability of phosphoric acid in rock phosphate. By G. S. Fraps. Jan., 1917.
213. The composition of the soils of south central Texas. By G. S. Fraps. Jan., 1917.
214. Progress report, substation No. 1, Beeville, Texas, 1910-1914. By E. E. Binford. Apr., 1917.
215. Progress report, substation No. 5, Temple, Texas, 1910-1914. By D. T. Killough. May, 1917.
216. Commercial feeding stuffs, 1916-17; Texas feed law. By Bonney Youngblood. Sept., 1917.
217. Commercial fertilizers in 1916-17. By G. S. Fraps. Sept., 1917.
218. Progress report, substation No. 7, Spur, Texas, 1909-1914. By R. E. Dickson. Sept., 1917.
219. Progress report, substation No. 8, Lubbock, Texas, 1909-1914. By R. E. Karper. Sept., 1917.
220. Egg-producing values of some Texas feeding stuffs. By R. N. Harvey. Oct., 1917.
221. Progress report, substation No. 9, Pecos, Texas, 1910-1914. By J. W. Jackson. Nov., 1917.
222. The composition of peanuts and peanut by-products. By G. S. Fraps. Dec., 1917.
223. Effects of lime and carbonate of lime on acid phosphate. By G. S. Fraps. Dec., 1917.
224. The influence of peanuts and rice bran on the quality of pork. By L. B. Burk. Jan., 1918.
225. Cocoanut meal vs. cottonseed meal for dairy cows. By P. V. Ewing and E. R. Spence. Mar., 1918.
226. Cooperative soft pork investigations: A method for the testing of pork on the basis of firmness. By P. V. Ewing, R. M. Green, and L. B. Burk.—A tentative standard for the testing of pork on the basis of firmness. By P. V. Ewing, L. B. Burk, and R. M. Green.—Ante mortem grading of pork on the basis of firmness. By P. V. Ewing and L. B. Burk.—Method of extracting fat samples from live hogs. By P. V. Ewing, L. H. Wright, and L. B. Burk. Apr., 1918.
227. Studies on the harlequin bug. By F. B. Paddock. Apr., 1918.
228. Influence of peanut meal on quality of pork. By L. B. Burk. May, 1918.
229. Experiments at substation No. 3, Angelton, Texas, 1909-1916. By N. E. Winters. May, 1918.
230. Spacing of rows in corn and its effect upon grain yield. By A. B. Conner. June, 1918.
231. The beemoth or waxworm. By F. B. Paddock. June, 1919. A revision of 158.
232. Mineral requirements of sheep. By G. S. Fraps. Aug., 1918.
233. Commercial fertilizers in 1917-18. By G. S. Fraps. Sept., 1918.
234. Commercial feeding stuffs, 1917-18. By F. D. Fuller. Sept., 1918.
235. Cooperative fertilizer experiments with cotton, corn, sweet potatoes, and Irish potatoes, 1908-1917. By G. S. Fraps. Sept., 1918.
236. Grain sorghum improvement. By A. B. Conner and R. E. Karper. Nov., 1918.
237. Progress report, Substation No. 11, Nacogdoches, Texas, 1909-1915. By G. T. McNess. Nov., 1918.
238. Dairy cattle feeding experiments. By P. V. Ewing, J. W. Ridgway, and W. A. Doubt. Nov., 1918.
239. Control of weeds in rice fields. By H. H. Laude. Dec., 1918.
240. The utilization of yucca for the maintenance of cattle. By J. M. Jones and A. B. Conner. Dec., 1918.
241. Cottonseed meal. By F. D. Fuller and G. S. Fraps. Feb., 1919.
242. Hardening peanut-fed hogs. By L. B. Burk and P. V. Ewing. Mar., 1919.
243. The needs of Texas soils for lime. By G. S. Fraps. Mar., 1919.
244. Composition of the soils of Archer, Franklin, and Harrison Counties. By G. S. Fraps. April, 1911.
245. Feeding values of certain feeding stuffs. By G. S. Fraps. Apr., 1919.
246. Report of the first Texas national egg-laying contest. By F. W. Kazmeier. June, 1919.
247. The chemical composition of the cotton plant. By G. S. Fraps. Aug., 1919.
248. Commercial fertilizers in 1918-19. By G. S. Fraps. Aug., 1919.
249. Field diseases of the sweet potato in Texas. By J. J. Taubenhaus. Sept., 1919.
250. Storage and diseases of the sweet potato in Texas. Oct., 1919.
251. Commercial feeding stuffs, September 1, 1918, to August 31, 1919. By F. D. Fuller. Sept., 1919.
252. Commercial feeding stuffs registered for sale in Texas, October 1, 1919. By F. D. Fuller. Oct., 1919.
253. Report of experiments at substation No. 12, Chillicothe, Texas. By R. W. Edwards. Nov., 1919.
254. Report of experiments at substation No. 11, Nacogdoches, Texas. By G. T. McNess. Nov., 1919.
255. Beekeeping for beginners. By H. B. Parks. Dec., 1919. Supersedes 142.
256. The cowpea weevil. By F. B. Paddock and H. J. Reinhard. Dec., 1919.
257. The cotton or melon louse: Life history studies. By F. B. Paddock. Dec., 1919.
258. Report of experiments, substation No. 4, Beaumont, Texas. Dec., 1919.
259. Nitrification in Texas soils. By G. S. Fraps. Jan., 1920.
260. Wilts of the watermelon and related crops (Fusarium wilts of cucurbits). By J. J. Taubenhaus. Jan. 1920. Dated Feb., 1920, at head of text.
261. Diseases of grains, sorghums, and millet, and their control in Texas. By J. J. Taubenhaus. Apr., 1920.
262. The searing iron vs. the knife for docking or detailing lambs. By J. M. Jones and C. M. Hubbard. Apr., 1920.

263. Rations for fattening steers: Cottonseed meal versus peanut meal; cold pressed cottonseed versus ground whole pressed peanuts; sorghum silage versus cottonseed hulls. By J. C. Burns. Aug., 1920.
264. Farm records and accounts. By H. M. Eliot and H. B. Killough. May, 1920.
265. Commercial fertilizers in 1919-20. By G. S. Fraps and S. E. Asbury. Aug., 1920.
266. The staple of Texas cotton. By E. P. Humbert. Aug., 1920.
267. The relation of the phosphoric acid of the soil to pot experiments. By G. S. Fraps. Oct., 1920.
268. Commercial feeding stuffs, Sept. 1, 1919, to Aug. 31, 1920. By F. D. Fuller. Oct., 1920.
269. Grain sorghum versus corn for fattening lambs. By J. M. Jones, R. A. Brewer, and R. E. Dickson. Oct., 1920.
270. A study of the black and the yellow molds of ear corn. By J. J. Taubenhaus. Oct., 1920.
271. The salt or sodium chloride content of feeds. By G. S. Fraps and S. Lomanitz. Oct., 1920.

UTAH.

Utah Agricultural Experiment Station, Logan.

BULLETINS.

1. Investigations in progress at the station. By J. W. Sanborn. June, 1890.
2. Plow trials. By J. W. Sanborn. Nov., 1890.
3. Experiments with garden vegetables. By E. S. Richman. Jan., 1891.
4. Dynamometer tests with wagons. By J. W. Sanborn. Jan., 1891.
5. Potato trials. By J. W. Sanborn.—Experiments with potatoes. By E. S. Richman. Mar., 1891.
6. Trials of sleds and tillage tools. By J. W. Sanborn. May, 1891.
7. Draft of mowing machines. By J. W. Sanborn. July, 1891.
8. Ensilage. By J. W. Sanborn. Aug., 1891.
9. Time of watering horses; whole versus ground grain for horses. By J. W. Sanborn. Dec., 1891.
10. Experiments with strawberries, peas, and beans. By E. S. Richman. Dec., 1891.
11. Blanketing horses and cattle; sheltered versus unsheltered cattle; exercise versus non-exercise of stock. By J. W. Sanborn. Apr., 1892.
12. Experiments with garden vegetables. By E. S. Richman. Mar., 1892.
13. Feeding hay and grain mixed to horses; feeding cut hay vs. whole hay to horses. By J. W. Sanborn. May, 1892.
14. Horticulture and entomology. By E. S. Richman. June, 1892.
15. Soiling steers, or green versus dry food. By J. W. Sanborn. Aug., 1892.
16. The digestibility of green and dry timothy. By W. P. Cutter. Aug., 1892.
17. Feeding root crops versus dry food. By J. W. Sanborn. Oct., 1892.
18. Notes of forest and fruit trees. By E. S. Richman. Oct., 1892.
19. Feeding ensilage versus dry food. [By J. W. Sanborn.] Oct., 1892.
20. Horticultural department [experiments]: By E. S. Richman. Mar., 1893.
21. Feeding ruminants on grain alone; night versus day irrigation. [By J. W. Sanborn.] Mar., 1893.
22. Grass versus nongrass fed pigs; exercise versus nonexercise of pigs. By J. W. Sanborn.—Value of natural waters for crop growth. By W. P. Cutter. May, 1893.
23. Shelter of stock; exercise versus non-exercise of stock; early versus late irrigation. By J. W. Sanborn. July, 1893.
24. Irrigation. By J. W. Sanborn. Aug., 1893.
25. Fruits and forest, shade and ornamental trees. By E. S. Richman. Oct., 1893.
26. Subirrigation versus surface irrigation. By J. W. Sanborn.—Water for irrigation. By Samuel Fortier. Dec., 1893.
27. Irrigation: Early, late, and usual. By J. W. Sanborn. Mar., 1894.
28. The value of grass in the production of pork; exercise versus non-exercise for pigs. By A. A. Mills. Apr., 1894.
29. Irrigation—amount of water to use; relative feeding values of timothy, lucerne and wild hay. By J. W. Sanborn. May, 1894.
30. Narrow versus wide rations for horses. By J. W. Sanborn. June, 1894.
31. Time to harvest lucerne; mulching. By J. W. Sanborn. June, 1894.
32. Roots and plants of farm crops. By J. W. Sanborn. June, 1894.
33. Grazing values of varieties of grass; drilling versus broadcasting grass seed. By J. W. Sanborn. June, 1894.
34. Relative value of wheat, peas, corn, and barley in the production of pork. By A. A. Mills. July, 1894.
35. Steer feeding: The value of straw and grain as a substitute for hay; short spring periods of grain feeding; relative value of ensilage, roots, and straw as condiments; value of different grain rations. By A. A. Mills. Aug., 1894.
36. Relative value of corn and oats for horses. By A. A. Mills. Sept., 1894.
37. Fruits and fruit trees; ornamental, forest, and shade trees. By E. S. Richman. Oct., 1894.
38. Preliminary report on seepage water and the underflow of rivers. By Samuel Fortier. Feb., 1895.
39. Farm irrigation. By A. A. Mills.—Orchard [and vineyard] irrigation. By E. S. Richman. May, 1895.
40. The economic production of pork. By A. A. Mills. Dec., 1895.
41. Tuberculosis. By F. W. Brewer. Dec., 1895.
42. Creaming experiments. By F. B. Linfield. Feb., 1896.
43. Dairy herd record for 1894-95; winter feeding experiments with dairy cows; some suggestions on the building and equipment of factories. By F. B. Linfield. May, 1896.
44. Alfalfa, or lucerne. By A. A. Mills. July, 1896.
45. Experiments with vegetables and fruits. By E. S. Richman. Aug., 1896.
46. Earthen dams. By Samuel Fortier. Nov., 1896.
47. The climate of Utah. By James Dryden. Feb., 1897. Reprint [1898].
48. The chemical life history of lucerne, Pt. I. By J. A. Widtsoe. Mar., 1897.
49. Spraying. By F. C. Sears. Apr., 1897.
50. The water supply of Cache Valley. By Samuel Fortier. June, 1897.
51. Poultry experiments. By James Dryden. Dec., 1897.
52. The chemical composition of Utah soils: Cache and Sanpete Counties. By J. A. Widtsoe. Jan., 1898.
53. Utah sugar beets, 1897. By J. A. Widtsoe. Feb., 1898.
54. Cattle feeding: Comparison of Utah feeding stuffs. By Luther Foster and L. A. Merrill.—Digestion experiments with shredded corn-fodder, lucern, timothy, and wheat bran. By J. A. Widtsoe. Feb., 1898.
55. Orchard pests. By W. P. Hedrick. Mar., 1898.
56. Field experiments with wheat, oats, and barley. By L. A. Merrill. Apr., 1898.
57. By-products of the dairy: Experiments in pig feeding; experiments in calf feeding. By F. B. Linfield. June, 1898.

58. The chemical life history of lucern, Pt. II. By J. A. Widtsoe and John Stewart. July, 1898.
59. Utah sugar beets in 1898. By Luther Foster and John Stewart. Mar., 1899.
60. Poultry experiments. By James Dryden. Mar., 1899.
61. Alfalfa, or lucern: The cutting time; its feeding value. By Luther Foster and L. A. Merrill. Apr. 1899.
62. Tree planting in Utah. By U. P. Hedrick. May, 1899.
63. Sugar beets in Sanpete and Sevier Counties. By Luther Foster. Nov., 1899.
64. Codling moth; a wasp that destroys the apple worm; sour cherries; the Oregon evergreen blackberry. By U. P. Hedrick. Dec., 1899.
65. Plant diseases and insect pests; San José scale. By C. P. Close. Feb., 1900.
66. Corn experiments. By Luther Foster and L. A. Merrill. Apr., 1900.
67. Poultry experiments. By James Dryden. Apr., 1900.
68. Experiments with dairy cows: A study of their records; winter feeding experiments; summer feeding experiments. By F. B. Linfield. June, 1900.
69. Golden vine field pea: Its chemical composition and forage value. By John Stewart. June, 1900.
70. Experiments in pork production. By Luther Foster and L. A. Merrill. June, 1900.
71. Carrying capacities of irrigation canals. By Samuel Fortier. July, 1900.
72. A soil survey in Salt Lake Valley, Utah. By F. D. Gardner and John Stewart. Oct., 1900.
73. Experiments in butter making and cheese making. By F. B. Linfield. Aug., 1901.
74. Lead or ein sugar-beet pulp. By J. A. Widtsoe and L. A. Merrill. Jan., 1902.
75. Arid farming or dry farming. By J. A. Widtsoe and L. A. Merrill. Jan., 1902.
76. Forcing lettuce. By C. P. Close. Mar., 1902.
77. Horse feeding. By L. A. Merrill. June, 1902.
78. Experiments in fattening lambs. By F. B. Linfield. Sept., 1902.
79. Process butter, a dairy fraud. By R. W. Clark and J. A. Crockett. Jan., 1903.
80. Irrigation investigations in 1901. [By J. A. Widtsoe and others.] Dec., 1902. See 86.
81. Poison in water from a gold and silver mill. By P. A. Yoder. Feb., 1903.
82. Feeding beet pulp to steers and sheep. By R. W. Clark. July, 1903.
83. Pruning of tree and bush fruits. By W. N. Hutt. Oct., 1903.
84. The grain smuts. By L. A. Merrill and B. F. Eliason. Nov., 1903.
85. Pear blight. By W. N. Hutt. Nov., 1904.
86. The right way to irrigate: Results of 1901. [By J. A. Widtsoe and W. W. McLaughlin.] Dec., 1903. A popular exposition of some of the results reported in 80.
87. The codling moth. By E. D. Ball. Mar., 1904.
88. The relation of smelter smoke to Utah agriculture. By J. A. Widtsoe. July, 1903.
89. A new centrifugal soil elutriator. By P. A. Yoder. July, 1904.
90. Feeding beet molasses and pulp to sheep and steers. By L. A. Merrill and R. W. Clark. July, 1904.
91. Arid farming in Utah: First report of the State experimental arid farms. By J. A. Widtsoe and L. A. Merrill. Jan., 1905.
92. Poultry experiments. By James Dryden. Feb., 1905.
93. Agricultural reconnaissance of the Uinta Indian Reservation. By W. W. McLaughlin. Mar., 1903.
94. Summary of pig feeding experiments at the Utah Experiment Station from 1890 to 1902 with deductions from the same. By F. B. Linfield. Jan., 1903.
95. Codling moth work in 1904. By E. D. Ball and E. G. Peterson. Mar., 1906.
96. Care of milk on the farm and the manufacture of butter and cheese. By R. W. Clark.—[Canning and paraffining cheese.] By R. W. Clark and J. A. Crockett. Mar., 1906.
97. Report on the southern Utah Experiment Station, 1906. By P. A. Yoder [and others]. Dec., 1906.
98. Report on the central Utah Experiment Station. By P. A. Yoder [and others]. Dec., 1906.
99. Report on irrigation and drainage investigations during 1905–1906. By W. W. McLaughlin [and others]. Dec., 1906.
100. Arid farming investigations. By W. M. Jardine. Dec., 1906.
101. Feeding experiments with cattle, sheep, swine, and horses. By R. W. Clark. Dec., 1906.
102. Poultry experiments. By James Dryden. June, 1907.
103. The milling qualities of wheat. By Robert Stewart and J. E. Greaves. Apr., 1908.
104. The storage of winter precipitation in soils. By J. A. Widtsoe. Oct., 1908.
105. Irrigation investigations: Factors influencing evaporation and transpiration. By J. A. Widtsoe Aug., 1909.
106. A study of the production and movement of nitric nitrogen in an irrigated soil. By Robert Stewart and J. E. Greaves. Dec., 1909.
107. Improvement of Utah horses. By J. T. Caine, III, and H. J. Frederick. Dec., 1909.
108. The effect of formalin on the vitality of seed grain. By Robert Stewart and John Stephens. Apr., 1910.
109. The nitrogen and humus problem in dry-land farming. By Robert Stewart. Aug., 1910.
110. The alfalfa leaf-weevil. By E. G. Titus. Sept., 1910.
111. The reclamation of seeped and alkali lands. By C. F. Brown and R. A. Hart. Dec., 1910.
112. A report of seven years' investigation of dry-farming methods. By L. A. Merrill. Dec., 1910.
113. The influence of the combined harvester on the value of the wheat. By Robert Stewart and C. T Hirst. Dec., 1910.
114. The movement of nitric nitrogen in soil and its relation to "nitrogen fixation." By Robert Stewart and J. E. Greaves. Dec., 1911.
115. The movement of water in irrigated soils. By J. A. Widtsoe and W. W. McLaughlin. May, 1912.
116. The production of dry matter with different quantities of irrigation water. By J. A. Widtsoe. Sept., 1921.
117. The yields of crops with different quantities of irrigation water. By J. A. Widtsoe and L. A. Merrill. Sept., 1912.
118. Methods for increasing the crop producing power of irrigation water. By J A. Widtsoe and L A. Merrill. Sept., 1912.
119. The effect of irrigation on the growth and composition of plants at different periods of their development. By J. A. Widtsoe and Robert Stewart. Sept., 1912.
120. The chemical composition of crops as affected by different quantities of irrigation water. By J. A. Widtsoe and Robert Stewart. Sept., 1912.
121. The soil of the Southern Utah Experiment Station. By J. A. Widtsoe and Robert Stewart. Jan., 1913.
122. The nature of the dry farm soils of Utah. By J. A. Widtsoe and Robert Stewart. Jan., 1913.
123. Farm drainage: A manual of instruction. By C. F. Brown. Aug., 1913.
124. Fruit variety tests on the Southern Utah Experiment Farm. By A. B. Ballantyne. Aug., 1913.
125. The chemical milling and baking value of Utah wheats. By Robert Stewart and C. T. Hirst. Aug., 1913.
126. A comparison of first, second and third crop alfalfa hay for milk production. By W. E. Carroll. Aug., 1913.

127. Report of the Richmond-Lewiston cow testing association. By W. E. Carroll. Aug., 1913.
128. Blooming periods and yields of fruit in relation to minimum temperatures. By A. B. Ballantyne Nov., 1913.
129. Codling moth studies in 1911: The driving spray under excessively wormy conditions. By E. D. Ball and W. M. Ball. Nov., 1913.
130. The change in weight of grain in arid regions during storage. By F. S. Harris and George Thomas. Jan., 1914.
131. Variety tests of field crops in Utah. By F. S. Harris and J. C. Hogenson. Mar., 1914.
132. Minor dry land crops at the Nephi experiment farm. By P. V. Cardon. Mar., 1914.
133. Irrigation and manuring studies: [1] The effect of varying quantities of irrigation water and manure on the growth and yield of corn, [1911–1913]. By F. S. Harris. May, 1914.
134. The nitric nitrogen content in the country rock. By Robert Stewart and William Peterson. June, 1914.
135. A study in annual egg production based on the records of a flock of seven-year-old hens and their progeny. By E. D. Ball, George Turpin, and Byron Alder. July, 1914.
136. The commercial production of sugar beet seed in Utah. By F. S. Harris. Jan., 1915.
137. The quality of home grown vs. imported wheat. By Robert Stewart and C. T. Hirst. Feb., 1915.
138. How to control the grasshoppers. By E. D. Ball. Feb., 1915.
139. The movement of soluble salts with the soil moisture. By F. S. Harris. May, 1915.
140. The summer pruning of a young bearing apple orchard. By L. D. Batchelor and W. E. Goodspeed. Nov., 1915.
141. Variation in minimum temperatures due to the topography of a mountain valley in its relation to fruit growing. By L. D. Batchelor and F. L. West. Dec., 1915.
142. Irrigation of peaches. By L. D. Batchelor. Jan., 1916.
143. Fruit tree root systems: Spread and depth as partly determined by excavations on the southern experiment farm, St. George, Utah. By A. B. Ballantyne. Apr., 1916.
144. Water table variations: Causes and effects. By A. B. Ballantyne. May, 1916.
145. Soil alkali studies: Quantities of alkali salts which prohibits the growth of crops in certain Utah soils. By F. S. Harris. Sept., 1916.
146. The irrigation of wheat. By F. S. Harris. Sept., 1916.
147. The alkali content of irrigation water. By Robert Stewart and C. T. Hirst. Sept., 1916.
148. Breeding for egg production: Pt. I, A study of annual and total production. By E. D. Ball, Byron Alder, and A. D. Egbert. Dec., 1916.
149. Breeding for egg production: Pt. II, Seasonal distribution of egg production with especial reference to "winter" egg production. By E. D. Ball and Byron Alder. Jan., 1917
150. Further studies of the nitric nitrogen content of the country rock. By Robert Stewart and William Peterson. May, 1917.
151. The freezing of fruit buds. By F. L. West and N. E. Edlefsen. Feb., 1917.
152. The effect of soil moisture content on certain factors in wheat production. By F. S. Harris and H. J. Maughan. Feb., 1917.
153. Selecting dairy bulls by performance. By W. E. Carroll. Apr., 1917.
154. Irrigation and manuring studies: II, The effect of varying quantities of irrigation water and manure on the growth and yield of corn [1911–1916]. By F. S. Harris and D. W. Pittman. Apr., 1917.
155. The beet leafhopper *Eutettix tenella* Baker] and the curly-leaf disease that it transmits. By E. D. Ball. June, 1917.
156. The irrigation of sugar beets. By F. S. Harris. June, 1917.
157. The irrigation of potatoes. By F. S. Harris. June, 1917.
158. Soil moisture studies under dry farming. By F. S. Harris and J. W. Jones. July, 1917.
159. Soil moisture studies under irrigation. By F. S. Harris and A. F. Bracken. July, 1917.
160. Important factors in the operation of irrigated Utah farms. By E. B. Brossard. Sept., 1917.
161. Orchard heating. By F. L. West and N. E. Edlefsen. Oct., 1917.
162. A quick method of obtaining accurate individual egg records without the trap nest. By Byron Alder and A. D. Egbert. Apr., 1918.
163. Composition of the irrigation waters of Utah. By J. E. Greaves and C. T. Hirst. June, 1918.
164. Factors affecting the depth of sowing various crops. By F. S. Harris and H. J. Maughan. Sept., 1918.
165. Labor costs and seasonal distribution of labor on irrigated crops in Utah Valley. By L. G. Connor. Oct., 1918.
166. The climate of Utah. By F. L. West and N. E. Edlefsen. Mar., 1919.
167. The irrigation of oats. By F. S. Harris and D. W. Pittman. Mar., 1919.
168. Relative resistance of various crops to alkali. By F. S. Harris and D. W. Pittman. July, 1919.
169. The use of alkali water for irrigation. By F. S. Harris and N. I. Butt. July, 1919.
170. A study of methods of determining soil alkali. By D. W. Pittman. Aug., 1919.
171. Alfalfa seed growing and the weather; with particular reference to conditions in Utah. By J. C. Alter. Feb., 1920.
172. The value of barnyard manure on Utah soils. By F. S. Harris. Mar., 1920.
173. The duty of water in Cache Valley, Utah. By F. S. Harris. Mar., 1920.
174. A variety survey and descriptive key of small grains in Utah. By George Stewart, May, 1920.
175. Sixteen years of dry-farm experiments in Utah. By F. S. Harris, A. F. Bracken, and I. J. Jensen. June, 1920.
176. Potato improvement by hill selection. By George Stewart. Nov., 1920.
177. Some types of irrigation farming in Utah. By E. B. Brossard. Dec., 1920.

VERMONT.

Vermont Agricultural Experiment Station, Burlington.

BULLETINS.

1. Analyses of commercial fertilizers. By W. W. Cooke. Mar. 31, 1887.
2. Analyses of fertilizers. By W. W. Cooke. June 20, 1887.
3. Analyses of bone meal. By W. W. Cooke. Aug., 1887.
4. [Feeding experiments with cowpea and seradella.] By W. W. Cooke. Nov. 22, 1887.
5. [Availability of nitrogen in fertilizers.] By W. W. Cooke. Jan. 23, 1888.
6. [Analyses of ashes, bone meal, and fertilizers.] By W. W. Cooke. Feb. 27, 1888.
7. [Conference on the Hatch act. Mar., 1888].
8. Analysis of fertilizers. By W. W. Cooke. Apr. 9, 1888.
9. Smut in oats, insecticides, and fertilizer analyses. By W. W. Cooke. Apr. 23, 1888.
10. New organization. By W. W. Cooke. May, 1888.
11. Cooperation in the study of insects; tent caterpillars. By G. H. Perkins. June, 1888.
12. Insecticides; seed tests; miscellaneous analyses. By W. W. Cooke. Aug., 1888.

13. Methods of cutting and planting potatoes; fertilizer analyses. By W. W. Cooke. Nov., 1888.
14. Analysis of fertilizers. By W. W. Cooke. Mar., 1889.
15. Effect of fertilizers on the composition of corn; analysis of hay. By W. W. Cooke. June, 1889
16. Testing milk at creameries. July, 1889.
17. Test of dairy cows at Vermont State Fair. By W. W. Cooke. Oct., 1889.
18. Pig feeding. By W. W. Cooke. Jan., 1890.
19. Questions concerning injurious insects. By G. H. Perkins. Apr., 1890.
20. Analyses of fertilizers. By W. W. Cooke. May, 1890.
21. A new milk test; testing milk at creameries and cheese factories; notes for the laboratory. Sept., 1890.
22. Test of dairy cows; home versus fair grounds. By J. L. Hills. Oct., 1890.
23. Analyses of fertilizers. By J. L. Hills. Mar., 1891.
24. Potato blight and rot. By L. R. Jones. May, 1891.
25. The bounty on maple sugar. By W. W. Cooke. [June, 1891].
26. Maple sugar. By W. W. Cooke and J. L. Hills. Sept., 1891.
27. Tests of dairy apparatus. By J. L. Hills. Jan., 1892.
28. Plant diseases: Potato blight and rot; a new potato disease; potato scab; apple and pear scab; oat smut. By L. R. Jones. Apr., 1892.
29. Analyses of fertilizers. By J. L. Hills. May, 1892.
30. Results of the bounty on maple sugar. By W. W. Cooke and J. L. Hills. June, 1892.
31. Feeding tests with sugar meal, cream gluten meal, and germ feed. By W. W. Cooke. Feb., 1893.
32. Oat smut. By L. R. Jones. Mar., 1893.
33. Record of the station herd for the year 1892. By W. W. Cooke. Apr., 1893.
34. Analyses of fertilizers. By J. L. Hills. Apr., 1893.
35. Analyses of fertilizers. By J. L. Hills. May, 1893.
36. Potato blights and their remedies. By L. R. Jones. 1893.
37. Annual report of the director, I. By W. W. Cooke. 1893.
38. Annual report of the director, II. By W. W. Cooke. 1893.
39. Annual report of the director, III. By W. W. Cooke. 1893.
40. Spraying potatoes. By L. R. Jones. Dec., 1893.
41. Analyses of commercial fertilizers. By J. L. Hills and B. O. White. Apr., 1894.
42. Bovine tuberculosis. By J. L. Hills and F. A. Rich. July, 1894.
43. Household pests: Buffalo beetle; clothes moths. By G. H. Perkins. Nov., 1894.
44. Spraying orchards and potato fields. By L. R. Jones. Dec., 1894.
45. Analyses of commercial fertilizers. By J. L. Hills and B. O. White. Mar., 1895.
46. Analyses of commercial fertilizers. By J. L. Hills and B. O. White. Apr., 1895.
47. Commercial fertilizers. By J. L. Hills and B. O. White. May, 1895.
48. Gluten feeds and meals. By J. L. Hills. Oct., 1895.
49. Potato blights and fungicides. By L. R. Jones. Dec., 1895.
50. Analyses of commercial fertilizers. By J. L. Hills and B. O. White. Mar., 1896.
51. Analyses of commercial fertilizers. By J. L. Hills and B. O. White. Apr., 1896.
52. Analyses of commercial fertilizers. By J. L. Hills, B. O. White, and C. H. Jones. May, 1896.
53. The pollination of plums. By F. A. Waugh. Aug., 1896.
54. Salad plants and plant salads. By F. A. Waugh. Nov., 1896.
55. Apple growing in Grand Isle County. By F. A. Waugh. Dec., 1896.
56. Orange hawkweed, or "paint brush." By L. R. Jones and W. A. Orton. Feb., 1897.
57. Analyses of commercial fertilizers. By J. L. Hills, B. O. White, and C. H. Jones. Mar., 1897.
58. Analyses of commercial fertilizers. By J. L. Hills, B. O. White, and C. H. Jones. Apr., 1897.
59. Analyses of commercial fertilizers. By J. L. Hills, B. O. White, and C. H. Jones. May, 1897.
60. Insects of the year. By G. H. Perkins. Oct., 1897.
61. Hardy apples for cold climates. By F. A. Waugh. Nov., 1897.
62. Home-grown grapes in Vermont. By F. A. Waugh. Jan., 1898.
63. Analyses of commercial fertilizers. By J. L. Hills, B. O. White, and C. H. Jones. Mar., 1898.
64. Analyses of commercial fertilizers. By J. L. Hills, B. O. White, and C. H. Jones. Apr., 1898.
65. Analyses of commercial fertilizers. By J. L. Hills, B. O. White, and C. H. Jones. May, 1898.
66. Club root and black rot, two diseases of the cabbage and turnip. By L. R. Jones. Sept., 1898.
67. Hybrid plums. By F. A. Waugh. Dec., 1898.
68. Inspection of milk tests and feeding stuffs. By J. L. Hills. Jan., 1899.
69. Analyses of commercial fertilizers. By J. L. Hills, C. H. Jones, and B. O. White. Mar., 1899.
70. Analyses of commercial fertilizers. By J. L. Hills, C. H. Jones, and B. O. White. Apr., 1899.
71. Analyses of commercial fertilizers. By J. L. Hills, C. H. Jones, and B. O. White. May, 1899.
72. Certain potato diseases and their remedies. By L. R. Jones. Sept., 1899. A summary of all station work on the subject previously published.
73. The trees of Vermont. By Anna M. Clark. Oct., 1899. See 194.
74. The home fruit garden: The beginning, the planting, the tending. By F. A. Waugh. Dec., 1899.
75. Check list of hybrid plums. By F. A. Waugh. Jan., 1900.
76. The forest caterpillar (*Clisiocampa disstria* Hub.). By G. H. Perkins. Mar., 1900.
77. Annalyses of commercial fertilizers. By J. L. Hills, C. H. Jones, and B. O. White. Apr., 1900.
78. Analyses of commercial feeding stuffs. By J. L. Hills, C. H. Jones, and B. O. White. Apr., 1900.
79. Analyses of commercial fertilizers. By J. L. Hills, C. H. Jones, and B. O. White. Apr., 1900.
80. Analyses of commercial fertilizers. By J. L. Hills, C. H. Jones, and B. O. White. May, 1900.
81. Principles and practice of stock feeding. By J. L. Hills. Sept., 1900. See also 152.
82. Analyses of commercial feeding stuffs. By J. L. Hills, C. H. Jones, and B. O. White. Sept., 1900.
83. Apples of the Fameuse type. By F. A. Waugh. Dec., 1900.
84. Analyses of commercial feeding stuffs. By J. L. Hills, C. H. Jones, and B. O. White. Jan., 1901.
85. Potato scab and its prevention. By L. R. Jones and A. W. Edson. Feb., 1901.
86. Analyses of commercial fertilizers. By J. L. Hills, C. H. Jones, and B. O. White. Mar., 1901.
87. Analyses of commercial fertilizers. By J. L. Hills, C. H. Jones, and B. O. White. May, 1901.
88. Analyses of commercial feeding stuffs. By J. L. Hills, C. H. Jones, and B. O. White. Oct., 1901.
89. Plum culture. By F. A. Waugh. Nov., 1901.
90. Apple growing in Madison County. By F. A. Waugh and M. B. Cummings. Dec., 1901.
91. Analyses of commercial feeding stuffs. By J. L. Hills, C. H. Jones, and B. O. White. Feb., 1902.
92. Analyses of commercial fertilizers. By J. L. Hills, C. H. Jones, and B. O. White. Apr., 1902.
93. Commercial fertilizers: Formulas for home mixturess. By J. L. Hills, C. H. Jones, and B. O. White. May, 1902.
94. Vermont grasses and clovers. By L. R. Jones. May, 1902.
95. A poisonous plant: The common horsetail (*Equisetum arvense*). By F. A. Rich and L. R. Jones. June, 1902.
96. Apple pomace a good feed for cows. By J. L. Hills. Sept., 1902.
97. Analyses of commercial feeding stuffs. By J. L. Hills, C. H. Jones, and B. O. White. Sept., 1902.
98. Analyses of commercial fertilizers. By J. L. Hills and C. H. Jones. Mar., 1902.

99. Commercial fertilizers: Vermont's usage of commercial fertilizers; concerning fertilizer buying; deficient plant food; glossary. By J. L. Hills and C. H. Jones. May, 1903.
100. Paying for separator cream at the creamery. By J. L. Hills. Aug., 1903.
101. Commercial feeding stuffs. By J. L. Hills, C. H. Jones, and F. M. Hollister. Sept., 1903.
102. The measurement of saw logs. By A. L. Daniels. Oct., 1903. Also revised edition.
103. The maple sap flow. By C. H. Jones, A. W. Edson, and W. J. Morse. Dec., 1903. See 105.
104. Commercial feeding stuffs. By J. L. Hills, C. H. Jones, and F. M. Hollister. Dec., 1903.
105. The maple sap flow. By J. L. Hills. Feb., 1904. A popular edition of 103.
106. Abstract of sixteenth annual report, 1902–3. By J. L. Hills. Mar., 1904.
107. Commercial fertilizers. By J. L. Hills, C. H. Jones, and F. M. Hollister. Apr., 1904.
108. Commercial fertilizers: Classification of commercial fertilizers; farm manures. By J. L. Hills, C. H. Jones, and F. M. Hollister. June, 1904. See 206.
109. Commercial feeding stuffs. By J. L. Hills, C. H. Jones, and F. M. Hollister. Sept., 1904.
110. Commercial feeding stuffs. By J. L. Hills, C. H. Jones, and F. M. Hollister. Dec., 1904.
111. Abstract of seventeenth annual report, 1903–1904. By J. L. Hills. Feb., 1905.
112. Commercial fertilizers. By J. L. Hills, C. H. Jones, and F. M. Hollister. Apr., 1905.
113. Preparation and use of sprays; spray calendar. By William Stuart. Apr., 1905.
114. Alfalfa in Vermont. By J. L. Hills and L. R. Jones. Apr., 1905.
115. Disease-resistant potatoes. By William Stuart. May, 1905.
116. Commercial fertilizers: How, when, and what to use. By J. L. Hills, C. H. Jones, and F. M. Hollister. June, 1905.
117. Commercial feeding stuffs. By. J. L. Hills, C. H. Jones, and F. M. Hollister. June, 1905.
118. Commercial feeding stuffs. By J. L. Hills and C. H. Jones. Dec., 1905.
119. Abstract of eighteenth annual report, 1904–5. By J. L. Hills. Feb., 1906.
120. Planting white pine in Vermont. By L. R. Jones. Mar., 1906.
121. Commercial fertilizers. By J. L. Hills and C. H. Jones. Mar., 1906.
122. Disease resistance of potatoes. By William Stuart. Apr., 1906.
123. Commercial fertilizers: Concerning the purchase of plant food; the moisture relations of the soil. By J. L. Hills and C. H. Jones. June, 1906. See also 173, 182, 198.
124. Commercial feeding stuffs. By J. L. Hills and C. H. Jones. Sept., 1906.
125. Commercial feeding stuffs. By J. L. Hills and C. H. Jones. Dec., 1906.
126. Commercial fertilizers. By J. L. Hills and C. H. Jones. Mar., 1907.
127. State nursery for forest tree seedlings. By L. R. Jones. Apr., 1907.
128. The testing of cows. By J. L. Hills. Apr., 1907.
129. Abstract of nineteenth annual report, 1905–1906. By J. L. Hills [and others]. Apr., 1907.
130. Commercial fertilizers; soil biology in its relation to fertilization. By J. L. Hills and C. H. Jones. June, 1907.
131. Commercial feeding stuffs. By J. L. Hills and C. H. Jones. Sept., 1907.
132. Forest planting in Vermont. By L. R. Jones and C. R. Pettis. Jan., 1908.
133. Commercial feeding stuffs. By J. L. Hills, C. H. Jones, and Carleton Cutler. Jan., 1908.
134. Commercial fertilizers. By J. L. Hills and C. H. Jones. Mar., 1908.
135. Commercial fertilizers: A quarter century of fertilizer inspection; soil deterioration and soil humus. By J. L. Hills, C. H. Jones, and Carleton Cutler. June, 1908.
136. Abstract, twentieth report, 1907: Plant diseases, horticulture, weeds, insects. By J. L. Hills. June, 1908.
137. Abstract, twentieth report, 1907: Crops, forestry, stock feeding, dairy husbandry. By J. L. Hills. July, 1908.
138. Commercial feeding stuffs; the viability of weed seeds in feeding stuffs. By J. L. Hills, C. H. Jones, and C. L. Beach. Jan., 1909.
139. Preliminary statement regarding the forestry problems of Vermont. By A. F. Hawes. Mar., 1909.
140. Commercial fertilizers. By J. L. Hills, C. H. Jones, and H. L. Miner. Mar., 1909.
141. Apple culture in Vermont. By William Stuart. Apr., 1909.
142. Plant diseases; potato spraying. By L. R. Jones and N. J. Giddings. May, 1909.
143. Commercial fertilizers; the service of a fertilizer control; soil physiography. By J. L. Hills, C. H. Jones, and H. L. Miner. June, 1909.
144. Feeding stuffs inspection: Concerning commercial feeding stuffs; concerning the manufacture and nature of feeds; the economics of feed purchase; the formation of grain ration. By J. L. Hills, C. H. Jones, and P. A. Benedict. Aug., 1909.
145. Vermont shrubs and woody vines. By L. R. Jones and F. V. Rand. Oct., 1909.
146. The grass and clover seed trade in Vermont in 1907–1909. By G. T. Harrington. Nov., 1909.
147. The bacterial soft rots of certain vegetables: The mutual relationships of the casual organisms. By H. A. Harding and W. J. Morse.—Pectinase, the cytolitic enzym produced by *Bacillus carotovorus* and certain other soft-rot organisms. By L. R. Jones. Dec., 1909.
148. A bacterial soft rot of muskmelon caused by *Bacillus melonis* n. sp. By N. J. Giddings. Jan., 1910.
149. A practical method for killing witch grass. By A. J. Eaton and H. A. Edson. Jan., 1910.
150. The rôle of anesthetics and other agents in plant forcing. By William Stuart. Mar., 1910.
151. "Buddy sap:" A preliminary report upon the microorganisms occurring in maple sap and their influence upon the quality of syrup. By H. A. Edson. Apr., 1910.
152. Commercial feeding stuffs; principles and practice of stock feeding. By J. L. Hills, C. H. Jones, and P. A. Benedict. Apr., 1910. Article on stock feeding is revised from 81.
153. Plant diseases; potato spraying. By B. F. Lutman. May, 1910.
154. Commercial fertilizers; soil classifications and adaptations. By J. L. Hills, C. H. Jones, and P. A. Benedict. June, 1910.
155. Principles and practice of ice cream making. By R. M. Washburn. Sept., 1910.
156. The management of Vermont forests with special reference to white pine. By A. F. Hawes. Jan., 1911.
157. The damping off of coniferous seedlings. By C. M. Gifford. Mar., 1911.
158. Commercial feeding stuffs: concerning feeding standards. By J. L. Hills [and others].—Summer soiling suggestions. By R. M. Washburn. May, 1911.
159. Plant diseases; twenty years' spraying for potato diseases; potato diseases and the weather. By B. F. Lutman. May, 1911.
160. Commercial fertilizers; lines and liming. By J. L. Hills [and others]. June, 1911.
161. Hemlock in Vermont; comparative study of log rules. By A. F. Hawes. Jan., 1912.
162. Plant diseases in 1911: potato spraying experiments in 1911. By B. F. Lutman. Jan., 1912.
163. Mendelian inheritance in the carnation. By William Stuart. Feb., 1912.
164. Commercial feeding stuffs: condimental feeds. By J. L. Hills [and others]. Mar., 1912.
165. The peat and muck deposits of Vermont. By J. L. Hills and F. M. Hollister. June, 1912.

166. Commercial fertilizers. By J. L. Hills [and others]. June, 1912.
167. Microorganisms of maple sap: Microorganisms occurring in maple sap and their influence on the color, flavor, and chemical composition of sirup. By H. A. Edson.—Discussion of physical and chemical data secured on maple sirups obtained from saps inoculated with microorganisms. By C. H. Jones.—Technical description of certain bacteria occurring in maple sap. By H. A. Edson and C. W. Carpenter. June, 1912.
168. Investigations of the potato fungus *Phytophthora infestans*. By L. R. Jones, N. J. Giddings, and B. F. Lutman. Aug., 1912.
169. Cultural studies on the Montreal market muskmelon. By William Stuart. Oct., 1912.
170. "Mony meikles mak a muckle": Studies of the rennet coagulation of milk. By R. M. Washburn and A. P. Bigelow.—The control of the moisture content of butter. By C. L. Beach, A. P. Bigelow, and R. H. Allen.—A bacterial infection of condensed milk. By L. A. Thayer.—The value of the escutcheon in judging dairy cattle. By C. F. Moran.—Mock silage. By C. L. Beach.—Concerning certain pasture weeds. By A. H. Gilbert.—Moss as a pasture weed. By J. J. Tracy.—The ensiling of weeds. By R. M. Washburn.—The effect of hot water and of mechanical treatment on seeds during germination. By H. A. Dodge.—Seed analyses. By J. P. Helyar. Dec., 1912.
171. Commercial feeding stuffs; concerning the Vermont hay crop. By J. L. Hills, C. H. Jones, and C. G. Williamson. Apr., 1913.
172. Place-effect influence on seed potatoes. By William Stuart. May, 1913.
173. Commercial fertilizers. By J. L. Hills, C. H. Jones, and C. G. Williamson.—The principles of land drainage. [By R. T. Burdick.] June, 1913. The last article is a revision of part of 123.
174. Methylene blue, remedy for infectious abortion. By F. A. Rich. June, 1913.
175. Studies on club root: The relation of *Plasmodiophora brassicae* to its host and the structure and growth of its plasmodium. By B. F. Lutman. Oct., 1913.
176. The management of second growth hardwoods in Vermont. By A. F. Hawes and B. A. Chandler. Jan., 1914.
177. Large seed a factor in plant production. By M. B. Cummings. Feb., 1914.
178. Studies in tolerance of New England forest trees: I, Development of white pine seedlings in nursery beds. By G. P. Burns. Mar., 1914.
179. Disease resistance of potatoes: Third report. By William Stuart. Apr., 1914.
180. Commercial feeding stuffs. By J. L. Hills [and others].—Concerning feeding practice. By A. A. Borland and E. H. Loveland. May, 1914.
181. Studies in tolerance of New England forest trees: II, Relation of shade to evaporation and transpiration in nursery beds. By G. P. Burns and F. P. Hooper. May, 1914.
182. Commercial fertilizers. By J. L. Hills [and others].—Irrigation. By R. T. Burdick. June, 1914. The last article is a revision of part of 123.
183. Agricultural seed. By G. P. Burns. June, 1914.
184. Potato scab. By B. F. Lutman and G. C. Cunningham. Sept., 1914.
185. Studies of club root: II, Disease resistance of crucifers; methods of combating club root. By G. C. Cunningham. Nov., 1914.
186. Farm apple storage. By M. B. Cummings and P. M. Lombard. Feb., 1915.
187. Flora of Vermont: Lists of ferns and seed plants growing without cultivation. Prepared by Vermont Botanical Club. Apr., 1915.
188. Forest planting in Vermont as an investment. By A. F. Hawes, Apr., 1915.
189. Commercial feeding stuffs. By J. L. Hills [and others].—Concerning the corn crop. By J. L. Hills. June, 1915.
190. Commercial fertilizers. By J. L. Hills [and others].—Crop rotation. By R. T. Burdick. June, 1915.
191. The red rot of conifers. By F. H. Abbott. Nov., 1915.
192. Agricultural seed. By G. P. Burns. Feb., 1916.
193. Studies in tolerance of New England forest trees: III, Discontinuous light in forests. By G. P. Burns. Feb., 1916.
194. The trees of Vermont. By G. P. Burns and C. H. Otis.—The structure and identification of our common lumber woods. By C. H. Otis. Mar., 1916.
195. Studies of the values of different grades of milk in infant feeding. By R. M. Washburn and C. H. Jones. Mar., 1916. Sec. 201.
196. Some studies on Bordeaux mixture. By B. F. Lutman. Mar., 1916.
197. Commercial feeding stuffs. By J. L. Hills, C. H. Jones, and G. F. Anderson.—Concerning the oat crop. By J. L. Hills. May, 1916.
198. Commercial fertilizers. By J. L. Hills, C. H. Jones, and G. F. Anderson.—Concerning tillage. By R. T. Burdick. June, 1916. The last article is a revision of part of 123.
199. Twenty-ninth annual report, 1915–16. By J. L. Hills. July, 1916.
200. Agricultural seed; concerning weeds and weed seeds. By G. P. Burns and A. K. Peitersen. Sept., 1916.
201. Value of different grades of milk in infant feeding. By R. M. Washburn and C. H. Jones. Oct., 1916. A popular edition of 195.
202. "Mony meikles mak a muckle:" II: The relation of the milk-vein system to production. By A. W. Aldrich and J. W. Dana.—The cost of production of milk and butterfat in 1911 and 1912. By G. M. Nelson.—The effect of the sire on the herd. By J. H. Wilson.—Concerning the Burlington milk supply. By J. E. Carrigan and W. T. Abell. Mar., 1917.
203. "Mony meikles mak a muckle;" III: The winter storage of roots. By P. H. Aldrich.—Forcing plants by means of warm water. By W. G. Bodine.—Concerning quality in celery. By J. B. Norton.—The gnarly apple disease of 1914. By W. H. Venable.—The thermal death point of yeast. By E. P. Wells.—Soil sterilization. By F. O. Ockerblad, jr.—The cost of producing maple products in 1912 and 1913. By C. J. Frink. Mar., 1917.
204. Commercial feeding stuffs. By J. L. Hills, C. H. Jones, and G. F. Anderson.—Concerning alfalfa and soy beans. By J. L. Hills. May, 1917.
205. Agricultural seed; concerning the germination of seed. By G. P. Burns, A. K. Peitersen, and L. H. Flint. June, 1917.
206. Commercial fertilizers. By J. L. Hills, C. H. Jones, and G. F. Anderson.—Concerning farm manures. By R. T. Burdick. June, 1917. The last article is a revision of part of 108.
207. The manufacture of commercial fertilizers. By J. L. Hills. June 1917.
208. Thirtieth annual report, 1916–17. By J. L. Hills. July, 1917.
209. The cost of producing market milk in 1916–17 on 212 Vermont farms. By G. F. E. Story and W. J. Tubbs. Sept., 1917.
210. A study of the frustum form factors of hard maple and yellow birch. By B. A. Chandler. Mar., 1918.
211. The aerial fertilization of plants with carbon dioxid. By M. B. Cummings and C. H. Jones. May, 1918.
212. Thirty-first annual report, 1917–18. By J. L. Hills. July, 1918.
213. Cold storage of cottage and other soft curd cheeses. By H. B. Ellenberger. June, 1919.

214. Tip burn of the potato and other plants. By B. F. Lutman. June, 1919.
215. Resistance of potato tubers to scab. By B. F. Lutman. June, 1919.
216. Commercial fertilizers, commercial feeding stuffs, agricultural seed. By J. L. Hills, C. H. Jones, G. F. Anderson, and L. H. Flint. Mar., 1920.
217. Blackberries of New England: Their classification. By Ezra Brainerd and A. K. Peitersen. June, 1920.

SUMMARIES.

Condensed outlines of articles published in Reports 1–19, Bulletins 1–133, 1887–1907. (Vermont Sta. Rpt., 20 (1906–07), p. 387–505.) Summaries arranged by topics with references to original publication.

VIRGINIA.

Virginia Agricultural Experiment Station, Blacksburg.

BULLETINS.

1. Application of fertilizers to wheat. 1889?
2. Experiment orchard; small fruits. By W. B. Alwood. Oct., 1889.
3. Steer feeding. By D. O. Nourse.—Meteorological record. By W. H. Reynolds. Nov., 1889.
4. Field tests with tomatoes; chemical composition of tomatoes. By W. B. Alwood and Walker Bowman. Jan., 1890.
5. Composition of feeding stuffs; analyses of some feeding stuffs. By Walker Bowman. Mar., 1890.
6. Variety tests with potatoes. By W. B. Alwood and R. H. Price. Mar., 1890.
7. Variety tests with strawberries. By W. B. Alwood. July, 1890.
8. Potato tests. By W. B. Alwood. Jan., 1891.
9. Tomatoes: Cultural and variety work. By W. B. Alwood.—Chemical examination of fruits. By Walker Bowman. Feb., 1891. Also abridged edition.
10. Steer and pig feeding. By D. O. Nourse. June, 1891.
11. Vegetables. By W. B. Alwood. Oct., 1891.
12. Tests of fertilizers on tobacco. Jan., 1892.
13. Antiseptic treatment of wounds; infectious abortion in cows. By E. P. Niles. Feb., 1892.
14. Chemistry of the tobacco plant. (Preliminary work.) By R. J. Davidson. Mar., 1892.
15. Treatment of diseases of the grape. By W. B. Alwood. Apr., 1892.
16. Cooperative corn tests. By D. O. Nourse. May, 1892.
17. Four diseases of the apple. By W. B. Alwood. June, 1892.
18. Antiseptics in relation to the treatment of wounds. By E. P. Niles. July, 1892.
19. Test of varieties of wheat. By D. O. Nourse. Aug., 1892.
20. A new fodder plant, *Lathyrus silvestris*. By E. A. Smyth, jr. Sept., 1892.
21. Test of fertilizers on wheat. By D. O. Nourse. Oct., 1892.
22. Bush fruits. By W. B. Alwood. Nov., 1892. See also 147.
23. Test of fertilizers on corn. By D. O. Nourse. Dec., 1892.
24. Injurious insects and diseases of plants, with remedial measures for the same. By W. B. Alwood. Jan., 1893.
25. Dorset horn sheep. By D. O. Nourse. Feb., 1893.
26. Tuberculosis and the Koch test. By E. P. Niles. Mar., 1893.
27. Strawberries. By W. B. Alwood. Apr., 1893.
28. Tests of varieties of wheat. By D. O. Nourse. May, 1893.
29. Tests of fertilizers on wheat. By D. O. Nourse. June, 1893.
30. Grape culture. By W. B. Alwood. July, 1893. Superseded by 94.
31. Tests of fertilizers on corn. By D. O. Nourse. Aug., 1893.
32. The cow in relation to public health. By E. P. Niles. Sept., 1893.
33. Corn husker and fodder cutter. By D. O. Nourse. Oct., 1893.
34. Roads and road making. By D. O. Nourse. Nov., 1893.
35. Fertilizer tests on grapes. By A. L. Holladay. Dec., 1893.
36. The horse's teeth. By E. P. Niles. Jan., 1894.
37. Strawberry culture. By W. P. Alwood. Feb., 1894.
38. Are all birds of prey injurious to the farmer? By E. A. Smyth, jr. Mar., 1894.
39. Tuberculosis. By E. P. Niles. Apr., 1894.
40. Ripe rot, or bitter rot, of apples. By W. B. Alwood. May, 1894.
41. Tests of varieties of wheat. By D. O. Nourse. June, 1894.
42. Tests of fertilizers on wheat. By D. O. Nourse. July, 1894.
43. Veterinary materia medica for farmers [Pt. I.]. By E. P. Niles. Aug., 1894.
44. Crimson clover (*Trifolium incarnatum*). By D. O. Nourse. Sept., 1894.
45. Veterinary materia medica for farmers, Pt. II. By E. P. Niles. Oct., 1894.
46. Principles of horseshoeing. By E. P. Niles. Nov., 1894.
47. Tests of fertilizers on wheat. By D. O. Nourse. Dec., 1894.
48. Evaporating apples. By W. B. Alwood. Jan., 1896 [i. e. 1895].
49. Pear culture. By W. B. Alwood. Feb., 1896. [i. e. 1895.]
50. Analyses of parts of tobacco plant at different stages of growth. By R. J. Davidson. Mar., 1895.
51. Analyses of different grades of manufacturing tobacco. By R. J. Davidson. Apr., 1895.
52. Percentages of nicotine in tobacco. By R. J. Davidson. May, 1895.
53. Silos and silage. By D. O. Nourse. June, 1895.
54. Shoeing for special purposes. By E. P. Niles. July, 1895.
55. A chemical study of the Irish potato: Pt. I, Analyses of the tubers. By T. L. Watson. Aug., 1895.
56. A chemical study of the Irish potato: Pt. II, Comparison of tubers grown in different States. By T. L. Watson. Sept., 1895.
57. The utilization of unmerchantable apples. By W. B. Alwood. Oct., 1895.
58. A new plan for the construction of a storage cellar. By W. B. Alwood. Nov., 1895.
59. Experiment garden notes, Pt. I. By W. B. Alwood. Dec., 1895.
60. Experiment garden notes, Pt. II. By W. B. Alwood. Jan., 1896.
61. Splenetic or Texas cattle fever. By E. P. Niles. Feb., 1896.
62. The San José, or pernicious scale. By W. B. Alwood. Mar., 1896.
63. Laboratory tests of creolin as a disinfectant. By F. S. Roop. Apr., 1896.
64. Some parasitical diseases of sheep. By E. A. Smyth, jr., and E. P. Niles. May, 1896.
65. Notes on the cherry orchard. By W. B. Alwood. June, 1896.
66. The distribution of the San José scale in Virginia. By W. B. Alwood. July, 1896.
67. Notes on the plum orchard. By W. B. Alwood. Aug., 1896.
68. Silage for hogs. By D. O. Nourse. Sept., 1896.
69. Tests of fertilizers on wheat. By D. O. Nourse. Oct., 1896.
70. Cheap silos in Virginia. By D. O. Nourse. Nov., 1896.

71. An experiment in generating vinegar. By W. B. Alwood. Dec., 1896.
72. Notes on treatment of San José scale, with directions for winter work. By W. B. Alwood. Jan., 1897.
73. Preservation of corn stover. By D. O. Nourse. Feb., 1897.
74. Legislation for the suppression of the San José scale; summer treatment for the San José scale. By W. B. Alwood. Mar., 1897.
75. Black leg. By E. P. Niles. Apr., 1897.
76. The cattle tick in Virginia. By E. P. Niles. May, 1897.
77. Tests of fertilizers on wheat. By D. O. Nourse. June, 1897.
78. Virginia marls. By W. B. Ellett and A. T. Eskridge. July, 1897.
79. Inspection and remedial treatment of San José scale. By W. B. Alwood. Aug., 1897.
80. Silage for horses. D. O. Nourse. Sept., 1897.
81. Grasses. By E. A. Smyth, jr. Oct., 1897.
82. Meteorological data and bloom notes of fruits. By W. B. Alwood and H. L. Price. Nov., 1897.
83. Index to preceding bulletins. Dec., 1897.
84. Dehorning. By E. P. Niles. Jan., 1898.
85. Tetanus. By Charles McCulloch. Feb., 1898.
86. A preliminary study of ticks. By E. P. Niles. Mar., 1898.
87. Canine distemper. By Charles McCulloch. Apr., 1898.
88. Growing forest-tree seedlings. By W. B. Alwood and J. L. Phillips. May, 1898.
89. Equine distemper. By Charles McCulloch. June, 1898.
90. Blackleg vaccine. By E. P. Niles. July, 1898.
91. Variety tests of strawberries. By W. B. Alwood and H. L. Price. Aug., 1898.
92. The influence of commercial fertilizers upon the quality of the Irish potato. By R. J. Davidson. Sept., 1898.
93. Tests of fertilizers on wheat. By D. O. Nourse. Oct., 1898.
94. The experimental vineyard, second report. By W. B. Alwood. Nov., 1898. A revision of 30.
95. Bovine distemper. By Charles McCulloch. Dec., 1898.
96. Experiments with chickens. By E. P. Niles. Jan., 1899.
97. The nature and use of certain insecticides. By J. L. Phillips and H. L. Price. Feb., 1899.
98. Orchard technique: I, Fruit soils of Virginia; II, Fruit list for Virginia. By W. B. Alwood. Mar., 1899.
99. Orchard technique: III, Growing the apple orchard. By W. B. Alwood. Apr., 1899.
100. Orchard technique: IV, Spraying the orchard. By W. B. Alwood. May, 1899.
101. Orchard technique: V, Apple production in Virginia. By W. B. Alwood. June, 1899.
102. The crop pest law. By W. B. Alwood. July, 1899.
103. Blackleg vaccine (revised). By E. P. Niles. Aug., 1899.
104. The prevention of Texas cattle fever and the amended laws controlling contagious and infectious diseases. By Charles McCulloch. Sept., 1899.
105. Steer feeding. By D. O. Nourse. Oct., 1899.
106. Barns. By D. O. Nourse. Nov., 1899.
107. Feeding stuffs. By R. J. Davidson. Dec., 1899.
108. Animal parasites, Pt. I. By E. P. Niles. Jan., 1900.
109. Animal parasites, Pt. II. By E. P. Niles. Feb., 1900.
110. Animal parasites, Pt. III. By E. P. Niles. Mar., 1900.
111. Animal parasites, Pt. IV. By E. P. Niles. Apr., 1900.
112. Animal parasites, Pt. V. By E. P. Niles. May, 1900.
113. Animal parasites, Pt. VI. By E. P. Niles. June, 1900.
114. Animal parasites, Pt. VII. By E. P. Niles. July, 1900.
115. The teeth of the horse as affected by age, Pt. I. By Charles McCulloch. Aug., 1900.
116. The teeth of the horse as affected by age, Pt. II. By Charles McCulloch. Sept., 1900.
117. The teeth of the horse as affected by age, Pt. III. By Charles McCulloch. Oct., 1900.
118. The teeth of cattle and sheep as affected by age. By Charles McCulloch. Nov., 1900.
119. The most common irregularities of the teeth of the horse, Pt. I. By Charles McCulloch. Dec., 1900.
120. The most common irregularities of the teeth of the horse, Pt. II. By Charles McCulloch. Jan., 1901.
121. Steer feeding. By D. O. Nourse. Feb., 1901.
122. Comparative skimming qualities of Holstein and Jersey milk. By W. D. Saunders. Mar., 1901.
123. Preliminary report on the use of blackleg vaccine in Virginia. By E. P. Niles. Apr. 1901.
124. Sheep scab. By John Spencer. May, 1901.
125. Mange in horses. By John Spencer. June, 1901.
126. The stomach worm. By John Spencer. May, 1901.
127. Observations on the production of vinegar in cellars. By W. B. Alwood and R. J. Davidson. Aug., 1901.
128. Orchard studies: I, The fruit plantation—pome fruits. By W. B. Alwood. Sept., 1901.
129. Orchard studies: II, The fruit plantation—stone fruits. By W. B. Alwood. Oct., 1901.
130. Orchard studies: III, Notes on some of the more important varieties of apples. By W. B. Alwood. Nov., 1901.
131. Orchard studies: IV, Remedial measures against San José scale. By W. B. Alwood. Dec. 1901.
132. Orchard studies: V, Report on crab apples. By W. B. Alwood and H. L. Price. Jan., 1902.
133. Orchard studies: VI, Second report on the cherry orchard. By W. B. Alwood and H. L. Price. Feb., 1902.
134. Orchard studies: VII, Spraying the plum orchard; notes on the varieties of domestic plums. By W. B. Alwood and H. L. Price. Mar., 1902.
135. Orchard studies: VIII, On the occurrence and treatment of fire blight in the pear orchard. By W. B. Alwood. Apr., 1902.
136. Orchard studies: IX, An investigation into the character of cider apples in Europe and comparisons with American fruit. By W. B. Alwood. May, 1902.
137. Orchard studies: X, A consideration of the commercial handling of cider fruit; grinding and expressing the must. By W. B. Alwood. June, 1902.
138. Orchard studies: XI, A consideration of the principles and technique involved in the fermentation and final finishing of ciders. By W. B. Alwood. July, 1902.
139. Orchard studies: XII, The chemical composition of ciders. By W. B. Alwood. Aug., 1902.
140. Orchard studies: XIII, Some observations on crown gall of apple trees. By W. B. Alwood. Sept., 1902.
141. Orchard studies: XIV, The lime-sulphur wash. By W. B. Alwood and J. L. Phillips. Oct., 1902.
142. Orchard studies: XV, The bitter rot of apples. By W. B. Alwood. Nov., 1902.
143. Orchard studies: XVI, The composition of apples. By W. B. Alwood and R. J. Davidson. Dec., 1902.
144. Stock and poultry powders or condimental foods. By D. O. Nourse and Meade Ferguson. Jan., 1903.
145. Forage plants. By D. O. Nourse. Feb., 1903.
146. Some notes on canning fruits and vegetables. By W. B. Alwood. Mar., 1903.

147. Bush fruits, second report. By H. L. Price. Apr., 1903.
148. Hay substitutes. By D. O. Nourse. May, 1903.
149. Cowpeas and soy beans. By D. O. Nourse. June, 1903.
150. The composition of cider as determined by dominant fermentation with pure yeasts. By W. B. Alwood, R. J. Davidson, and W. A. P. Moncure. July, 1904.
151. Apple production in Virginia. By W. B. Alwood. Sept., 1904.
152. Experiments with caustic soda and some patent washes against the San José scale. By J. L. Phillips. Oct., 1904.
153. The horn fly. By John Spencer. Dec., 1904.
154. The inoculation and cultivation of alfalfa. By A. M. Soule and Meade Ferguson. Apr., 1905.
155. Meteorological data and bloom notes of fruits. By H. L. Price. May, 1905.
156. Gluten and cottonseed meal with silage, hay and stover for dairy cows. By A. M. Soule and J. R. Fain. July, 1905.
157. Silage, hay and stover in beef making. By A. M. Soule and J. R. Fain. Sept., 1905.
158. Milk fever, its causes, symptoms and successful treatment. By John Spencer. Nov., 1905.
159. Soil inoculation with artificial cultures. By Meade Ferguson. Jan., 1906.
160. The influence of selected yeasts upon fermentation. By W. A. P. Moncure, R. J. Davidson, and W. B. Ellett. Mar., 1906.
161. Varieties of fruit for the home orchard. By H. L. Price. Mar., 1906.
162. Improving the quality of cream from inferior milk. By W. D. Saunders. May, 1906.
163. Origin, composition, and utility of fertilizing materials. By R. J. Davidson and W. B. Ellett. July, 1906.
164. Stall feeding versus grazing. By A. M. Soule and J. R. Fain. Jan., 1907.
165. The improvement of corn. By A. M. Soule and P. O. Vanatter. Mar., 1907.
166. The improvement of fire-cured tobacco. By G. T. McNess, E. H. Mathewson, and B. G. Anderson. May, 1907.
167. Corn and various amendments as food for hogs. By A. M. Soule, J. R. Fain, and M. P. Jarnagin. June, 1907.
168. Experiments with oats, millet, and various legumes. By A. M. Soule and P. O. Vanatter. June, 1907.
169. Protein requirements for dairy cows. By A. M. Soule, J. R. Fain, and M. P. Jarnagin. June, 1907.
170. Studies in milk and butter production. By A. M. Soule, J. R. Fain, and M. P. Jarnagin. July, 1907.
171. The development of grade and cross-bred beef cattle. By J. R. Fain and M. P. Jarnagin. July, 1907.
172. Grains to supplement skim-milk for calves. By J. R. Fain and M. P. Jarnagin. Aug., 1907.
173. Finishing beef cattle. By A. M. Soule, J. R. Fain, and M. P. Jarnagin. Aug., 1907.
174. The cultivation of potatoes. By A. M. Soule and P. O. Vanatter. Aug., 1907.
175. Cooperative tobacco investigations. By E. H. Mathewson, B. G. Anderson, and R. P. Cocke. Jan., 1908.
176. Hog feeding: Skimmed milk versus blood meal; old corn versus new corn. By W. J. Quick and A. P. Spencer. July, 1908.
177. Inheritance in tomato hybrids. By H. L. Price and A. W. Drinkard, jr. July, 1908.
178. Causes of the heavy loss of lambs in 1908. By W. J. Quick and A. P. Spencer. Aug., 1908.
179. Home-made soluble oils for use against the San José scale. By J. L. Phillips. Oct., 1908.
180. The blue grass of southwest Virginia. By W. B. Ellett. Jan., 1909.
181. Wormy apples and how to prevent them; results of spraying for codling moth in 1908. By J. E. Buck. Mar., 1909.
182. Silo construction. By Lyman Carrier. June, 1909.
183. Work at the tobacco stations. By E. H. Mathewson. June, 1909.
184. Impurities in grass and clover seed sold in Virginia. By G. B. De Loach, Lyman Carrier, and T. B. Hutcheson. Aug., 1909.
185. The production of clean and sanitary milk: Results of experiments to determine the number of bacteria in milk produced under different conditions, and their significance. By W. K. Brainerd. Sept., 1909.
186. The efficiency of hand separators. By W. K. Brainerd and W. L. Mallory. Mar., 1910.
187. Lime for Virginia farms. By W. B. Ellett, with contributions by T. C. Johnson and E. H. Mathewson. Mar., 1910.
188. The use of lime-sulphur sprays in the summer spraying of Virginia apple orchards. By W. M. Scott. Mar., 1910.
189. Some diseases of swine. By N. S. Mayo. Dec., 1910.
190. Cooperative herd testing. By W. D. Saunders and C. W. Holdaway. Jan., 1911.
191. Cabbage club root in Virginia. By H. S. Reed. Apr., 1911.
192. Tomato blight and rot in Virginia. By H. S. Reed. Apr., 1911.
193. Grass culture. By T. B. Hutcheson. July, 1911.
194. Milk standards: A study of the bacterial count and dairy score card in city milk inspection. By W. K. Brainerd and W. L. Mallory. Sept., 1911.
195. Foliage diseases of the apple: Report on spraying experiments in 1910 and 1911. By H. S. Reed, J. S. Cooley, and J. T. Rogers. Feb., 1912.
196. Crop rotation and fertilizer experiments with sun-cured tobacco. By W. W. Green. May, 1912.
197. Growing and curing sun-cured tobacco. By W. W. Green. May, 1912.
198. Crop rotation and fertilizer experiments with bright tobacco. By R. P. Cocke. May, 1912.
199. Treatment of bovine tuberculosis. By N. S. Mayo and William Kerr. July, 1912.
200. Chemical studies of Virginia soils. By W. B. Ellett and H. H. Hill. Dec., 1912.
201. Preparation of concentrated lime-sulphur solution on the farm. By G. C. Starcher. Feb., 1913.
202. The immediate effect on yield of crossing strains of corn. By Lyman Carrier. May, 1913.
203. Experiments on the control of the cedar rust of apples. By H. S. Reed, J. S. Cooley, and C. H. Crabill. Jan., 1914.
204. The management of blue-grass pastures. By Lyman Carrier and R. A. Oakley. Feb., 1914.
205. Summary of ten years' experiments with tobacco. By E. H. Mathewson. June, 1914.
206. Experiments with dark tobacco. By B. G. Anderson. June, 1914.
207. Alfalfa experiments. By Lyman Carrier, E. R. Hodgson, R. P. Cocke, and B. G. Anderson. June, 1914.
208. Preparation of nicotine extracts on the farm. By W. B. Ellett and J. T. Grissom. July, 1914.
209. The frog-eye leaf spot of apples. By C. H. Crabill. Dec., 1915.
210. A stone-fruit spray made from hydrated lime and sulphur. By G. C. Starcher. Mar., 1916.
211. Effects of binders upon the melting and hardness of ice cream. By C. W. Holdaway and R. R. Reynolds. June, 1916.
212. Sudan grass. By T. B. Hutcheson, E. R. Hodgson, and T. K. Wolfe. Nov., 1916.
213. Spraying and dusting tomatoes. By F. D. Fromme and H. E. Thomas. Dec., 1916.
214. Corn culture. By T. B. Hutcheson, E. R. Hodgson, and T. K. Wolfe. Mar., 1917.

215. Wintering two-year-old steers preparatory to finishing on grass the following summer. By R. E. Hunt. Aug., 1917.
216. Wheat culture. By T. B. Hutcheson and T. K. Wolfe. Sept., 1917.
217. Potato culture. By T. B. Hutcheson and T. K. Wolfe. Dec., 1917.
218. Peanut culture. By E. T. Batten. Jan., 1918.
219. Wintering dairy heifers. By R. E. Hunt. Apr., 1918.
220. Bean rust: Its control through the use of resistant varieties. By F. D. Fromme and S. A. Wingard. Nov., 1918.
221. Fertilizers and their relation to crop production in Virginia. By T. B. Hutcheson and T. K. Wolfe. Mar., 1919.
222. The nematode disease of wheat in Virginia. By F. D. Fromme. Aug., 1919.
223. Dusting experiments in peach and apple orchards. By F. D. Fromme and G. S. Ralston. Nov., 1919.

TECHNICAL BULLETINS.

1 The effect of association of legumes and nonlegumes. By W. B. Ellett, H. H. Hill, and W. G. Harris. Apr., 1915. Reprinted from Ann. Rpt. 1913–1914.
2. Notes on plant diseases in Virginia observed in 1913 and 1914. By H. S. Reed and C. H. Crabill. Apr., 1915. Reprinted from Ann. Rpt. 1913–1914.
3. Nitrogen fixation and nitrification in various soil types. By H. S. Reed and Bruce Williams. Apr., 1915. Reprinted from Ann. Rpt. 1913–1914.
4. The effect of some organic soil constituents upon nitrogen fixation by azotobacter. By H. S. Reed and Bruce Williams. Apr., 1915. Reprinted from Ann. Rpt. 1913–1914.
5. Some effects of pruning, root pruning, ringing, and stripping on the formation of fruit buds on dwarf apple trees. By A. W. Drinkard, jr. Apr., 1915. Reprinted from Ann. Rpt. 1913–1914.
6. The effect of green manuring on soil nitrates under greenhouse conditions. By H. H. Hill. Apr., 1915. Reprinted from Ann. Rpt. 1913–1914.
7. Smoothness and keeping qualities in ice cream, as affected by solids. By W. K. Brainerd. Apr., 1915. Reprinted from Ann. Rpt. 1913–1914.
8. The amount of arsenic in solution when lead arsenate is added to different spray solutions. By W. B. Ellett and J. T. Grissom. Apr., 1915. Reprinted from Ann. Rpt. 1913–1914.
9. The cedar rust disease of apples caused by *Gymnosporangium juniperi virginianae* Schw. By H. S. Reed and C. H. Crabill. May, 1915.
10. Some effects of temperature upon the growth and activity of bacteria in milk. By H. S. Reed and R. R. Reynolds. Mar., 1916.
11. North American varieties of the strawberry, with a bibliography of North American literature of the strawberry. By S. W. Fletcher. Aug., 1916.
12. The effects of high protein and high energy rations in feeding dairy cows. By W. B. Ellett and C. W. Holdaway. June, 1917. Reprinted from Ann. Rpt. 1914–1916.
13. A ten-year study of the effect of fertilizers on the soluble plant food in the soil and on the crop yield. By W. B. Ellett and H. H. Hill. June, 1917. Reprinted from Ann. Rpt. 1914–1916.
14. Effect of soil moisture on growth and maturity in maize. By T. B. Hutcheson and T. K. Wolfe. June, 1917. Reprinted from Ann. Rpt. 1914–1916.
15. The effect of different plant tissues on the fixation of atmospheric nitrogen; a study of the bacteriology of fresh and decomposing manure. By T. J. Murray. June, 1917. Reprinted from Ann. Rpt. 1914–1916.
16. Pot experiments to determine primarily the availability of phosphoric acid in Thomas slag phosphates in comparison with other phosphates. By W. B. Ellett and A. A. Ingham. June, 1917. Reprinted from Ann. Rpt. 1914–1916.
17. Further observations on the effects of pruning, root pruning, ringing, and stripping on the formation of fruit buds on dwarf apple trees. By A. W. Drinkard, jr.—Studies on methods of protecting ringing wounds on apple trees to promote their healing. By A. W. Drinkard, jr., and A. A. Ingham. June, 1917. Reprinted from Ann. Rpt. 1914–1916.
18. The effect of hybridization on maturity and yield in corn. By T. B. Hutcheson and T. K. Wolfe. June, 1917. Reprinted from Ann. Rpt. 1914–1916.
19. A comparison of methods for determining soil acidity and a study of the effects of green manures on soil acidity. By H. H. Hill. Apr., 1919.
20. The effects of high protein and high energy rations in feeding dairy cows. By W. B. Ellett and C. W. Holdaway. June, 1920.

WASHINGTON.

Washington Agricultural Experiment Station, Pullman.

BULLETINS.

1. Announcements. By George Lilley. Dec., 1891.
2. Report of farmers' institute held at Colton, Wash., Jan. 30, 1892. [By George Lilley and others.] 1892.
3. Report of farmers' institute held at Garfield, Wash., Feb. 20, 1892. [By George Lilley and others.] 1892.
4. Wireworms. By J. O'B. Scobey. May, 1892.
5. Report of farmers' institute held at Pomeroy, Wash., May 15, 1892. [By George Lilley and others.] 1892.
6. Horticultural information. By E. R. Lake. Oct., 1892.
7. Two injurious insects. By C. V. Piper. Jan., 1893.
8. Common fungus diseases and methods of prevention; dodder. By C. V. Piper. June, 1893.
9. Sugar beets. By Elton Fulmer. [1893?] See also Popular Bul. 105.
10. Agricultural notes: Wheats, barleys, oats, peas, and forage crops. By E. R. Lake.—Review of the weather and crops in Washington for 1893. By H. F. Alciatore. Dec., 1893.
11. Preliminary report of a feeding test with swine. By E. R. Lake. Feb., 1894.
12. Forest-tree plantation. By J. A. Balmer. 1894.
13. Washington soils. By Elton Fulmer and C. C. Fletcher. 1894. Also Popular Bul. 7.
14. Silos and ensilage. By W. J. Spillman. Nov., 1894.
15. Sugar beets in Washington. By Elton Fulmer. [1894?] See also Popular Bul. 105.
16. Feeding wheat to hogs. By W. J. Spillman. Mar., 1895.
17. Insect pests of the garden, farm, and orchard. By C. V. Piper. 1895.
18. The Babcock milk test. By W. J. Spillman. Aug., 1895.
19. Vegetables: Notes on the crops of 1895. By J. A. Balmer. 1896.
20. Fiber flax in Washington. By A. W. Thornton. 1896.
21. Susceptibility of spermophiles to pathogenic bateria. By A. B. Kibbe. 1896.

22. Influenza. By S. B. Nelson. Oct., 1896.
23. Some notes concerning the nitrogen content of soils and humus. By Elton Fulmer, Oct., 1896.
24. The acid test for milk and cream. By W. J. Spillman. Oct., 1896.
26. [i. e., 25]. Pruning orchard trees. By J. A. Balmer. Dec., 1896.
26. Experiments in the culture of the sugar beet in Washington for 1895 and 1896. By Elton Fulmer. Dec., 1896. Also Popular Bul. 105.
27. A few facts about insects. By R. W. Doane. Jan., 1897.
28. Clearing land. By F. A. Huntley. Jan., 1897.
29. Rational stock feeding. By W. J. Spillman. Dec., 1896. See also 43.
30. A report on damage to fruit trees caused by the severe freeze of November 26–28, 1896. By J. A. Balmer. Dec., 1897.
31. Irrigation experiments in sugar-beet culture in the Yakima Valley. By Elton Fulmer. Dec., 1897. Also Popular Bul. 105.
32. Correction of Babcock test for cream; effect of richness of cream on acid test. By W. J. Spillman. [1897?]
33. Fiber flax investigations. By F. A. Huntley. May, 1898.
34. The Russian thistle in Washington. By C. V. Piper. May, 1898.
35. Miscellaneous injurious insects. By C. V. Piper and R. W. Doane. May, 1898.
36. Insects injurious to currants and gooseberries. By C. V. Piper and R. W. Doane. May, 1898.
37. The present status of the Russian thistle in Washington. By C. V. Piper. Oct., 1898.
38. Prunes. By J. A. Balmer. May, 1899.
39. The improvement of country roads. By W. J. Roberts. Nov., 1899.
40. Fertilizers: Principles underlying the use of fertilizers. By Elton Fulmer.—Sources and composition of fertilizers. By W. J. Heileman. Fertilizer law of Washington. Dec., 1899.
41. Forage plants in Washington. By W. J. Spillman. 1900.
42. A new sugar-beet pest and other insects attacking the beet. By R. W. Doane. 1900
43. Rational stock feeding. By W. J. Spillman. 1900. A revision of 29.
44. Fish scrap fertilizers. By W. H. Heileman. 1900.
45. A preliminary report of poison parsnip in western Washington. By D. A. Brodie. 1901.
46. Potato blight and its treatment. By D. A. Brodie. 1901.
47. The variegated cutworm. By R. W. Doane and D. A. Brodies. 1901.
48. A mechanical ration computer. By W. J. Spillman. 1901.
49. Alkali and alkali soils. By W. H. Heileman. 1901.
50. A preliminary report on glanders. By S. B. Nelson. 1902.
51. Locating orchards in Washington. By S. W. Fletcher. 1902.
52. Planting orchards in Washington. By S. W. Fletcher. 1902.
53. Nursery stock for Washington orchards. By S. W. Fletcher. 1902.
54. The formalin treatment for wheat and oat smut. By R. K. Beattie. 1902.
55. Washington soils. By Elton Fulmer. 1902. Also Popular Bul. 7.
56. Spraying for the San José scale with modifications of the sulphur-salt-lime wash. By C. V. Piper.—Chemical notes on the sulphur-salt-lime wash. By R. W. Thatcher. 1903.
57. Home vegetable garden in the Palouse country. By S. W. Fletcher. 1903.
58. Experiments in feeding swine. By E. E. Elliott. 1903.
59. Root diseases of fruit and other trees caused by toadstools: Root rot caused by *Armillaria mellea:* root disease caused by *Armillaria mellea* var. By C. V. Piper and S. W. Fletcher. 1903.
60. A report on the range conditions of central Washington. By J. S. Cotton. 1904.
61. A report on irrigation conditions in the Yakima Valley, Washington. By O. L. Waller. 1904.
62. The raspberry cane maggot. By W. H. Lawrence. 1904.
63. The raspberry root borer or the blackberry crown borer. By W. H. Lawrence. 1904.
64. The apple scab in western Washington. By W. H. Lawrence. 1904.
65. Three common insect pests of western Washington: The oyster-shell bark louse; the woolly aphis of the apple; the pear and cherry slug. By W. H. Lawrence. 1904.
66. Blackspot canker. By W. H. Lawrence. 1904.
67. Some notes concerning Halphen's test for cottonseed oil; reaction of lard from cottonseed-meal-fed hogs with Halphen's reagent; effects of feeding cottonseed meal upon the health of animals. By Elton Fulmer. 1905.
68. The wormy apple. By A. L. Melander. 1905.
69. Preliminary report on the codling moth in the Yakima Valley. By E. L. Jenne. 1905.
70. The powdery mildews of Washington. By W. H. Lawrence. 1905.
71. Preserving eggs. By R. W. Thatcher. 1905. Also Popular Buls. 54 and 114.
72. The chemical composition of Washington forage crops. (First report.) By R. W. Thatcher. 1905.
73. Feeding wild plants to sheep. By S. B. Nelson. 1906.
74. Two insect pests of the elm. By A. L. Melander. 1906.
75. Apple scab in eastern Washington. By W. H. Lawrence. 1906.
76. Economical preparation of the sulphur-lime spray. By R. W. Thatcher. 1906.
77. The codling moth in the Yakima Valley. By A. L. Melander and E. L. Jenne. 1906. Also Popular Bul. 5.
78. The goat industry in western Washington. By D. A. Brodie. 1906.
79. Steer feeding under eastern Washington conditions. By E. E. Elliott and W. A. Linklater. 1906.
80. Growing alfalfa without irrigation in Washington. By E. E. Elliott. 1907.
81. The codling moth in eastern Washington. By A. L. Melander and E. L. Jenne. 1907. Also Popular Bul. 5.
82. The chemical composition of Washington forage crops, second report; analyses of grains and concentrated feeding stuffs. By R. W. Thatcher.—Appendix: The State feeding law. 1907.
83. Some important plant diseases of Washington. By W. H. Lawrence. 1907.
84. Wheat and flour investigations (crop of 1905). By R. W. Thatcher. 1907. Also Popular Bul. 6.
85. Washington soils. By R. W. Thatcher. 1908. Also Popular Bul. 7.
86. The codling moth in 1907. By A. L. Melander and R. E. Trumble. 1908. Also Popular Bul. 5.
87. Raspberries, blackberries, and loganberries in Washington. By W. S. Thornber. 1909. Also Popular Bul. 18.
88. Lime as a fertilizer. By R. W. Thatcher.—Farm practice in applying land plaster in western Oregon and western Washington. By Byron Hunter. 1909. Also Popular Bul. 19.
89. The hybrid wheats. By W. J. Spillman. 1909. Also Popular Bul. 21.
90. Forest, shade, and ornamental trees in Washington. By W. S. Thornber. 1909.
91. Wheat and flour investigations (crops of 1906–7). By R. W. Thatcher. 1910. See also Popular Bul. 29.
92. Cherries in Washington. By W. S. Thornber. 1910.
93. A preliminary report of some experiments in clearing logged-off land with a stump burner; a promising method for destroying stumps and logs. By W. H. Lawrence. 1910.
94. Potato investigations. By A. G. Craig. 1910.

95. Chou moellier or marrow cabbage. By W. H. Lawrence. 1910.
96. Hatching and rearing of turkeys by artificial methods. By H. L. Blanchard. 1910.
97. Anthracnose of the blackberry and raspberry. By W. H. Lawrence. 1910.
98. Commercial fertilizers. By Elton Fulmer. 1911. See also Popular Bul. 37.
99. Field pea production in Washington. By M. W. Evans. 1911.
100. Wheat and flour investigations: Analyses and tests of crops of 1908 and 1909. By R. W. Thatcher, G. A. Olson, and W. L. Hadlock.—The composition and milling quality of Washington wheats. By R. W. Thatcher.—A simple apparatus for determining the milling qualities of wheats. By G. A. Olson. 1911. See Also Popular Bul. 39.
101. Methods of clearing logged-off lands. By H. W. Sparks. 1911. See also Popular Bul. 40.
102. Wheat and flour investigations: A basis for selection of desirable seed for breeding for improvement of nitrogen content; the distribution of nitrogen in different parts of a wheat spike. By R. W. Thatcher. 1911.
103. The control of the codling moth. By A. L. Melander. Dec., 1911.
104. Twenty-first annual report for the year ending June 30, 1911. By R. W. Thatcher. Dec., 1911.
105. The nitrogen and humus problem in dry farming. By R. W. Thatcher. June, 1912.
106. The penetration system of orchard spraying. By A. L. Melander and R. K. Beattie. Jan., 1913.
107. Plant diseases induced by *Sclerotinia perplexa* nov. sp. By W. H. Lawrence. Oct., 1912.
108. Bluestem of the black raspberry. By W. H. Lawrence. Oct., 1912.
109. Twenty-second annual report for the year ending June 30, 1912. [By R. W. Thatcher.] Dec., 1912.
110. Commercial fertilizers. By Elton Fulmer. Jan., 1913.
111. A report of the investigations concerning the chemical composition of wheat, 1906 to 1912, inclusive. By R. W. Thatcher. Sept., 1913. See also Popular Bul. 68.
112. A preliminary report on the investigations of bovine red water (cystic hematuria) in Washington. By J. W. Kalkus. Oct., 1913.
113. Plants used for food by sheep on the Mica mountain summer range. By R. K. Beattie. Dec., 1913.
114. Tuberculosis: A report of the results of the continued injections of tuberculin upon tubrecular cattle. By S. B. Nelson. Oct., 1914.
115. Studies on the relation of certain species of Fusarium to the tomato blight of the Pacific northwest. By H. B. Humphrey. Oct., 1914.
116. The quantitative determinations of mono-, di-, and tri-calcium phosphates and their application. By G. A. Olson. Oct. 3, 1914.
117. Report on fires occurring in threshing separators in eastern Washington during the summer of 1914. By I. D. Cardiff [and others]. Nov. 3, 1914.
118. Twenty-fourth annual report for the year ending June 30, 1914. [By I. D. Cardiff.] Nov., 1914.
119. First annual report, department of dryland demonstration and experiment for the year ending Dec. 31, 1914. [By I. D. Cardiff.] Jan., 1915.
120. First annual report, bureau of farm development for the year ending December 31, 1914. [By I. D. Cardiff.] Jan., 1915.
121. Washington wheats. By E. G. Schafer and E. F. Gaines. Feb., 1915.
122. A study of grazing conditions in the Wenaha National Forest. By H. T. Darlington. May, 1915.
123. Time and method of tillage on the yield and comparative cost of production of wheat in the Palouse region of eastern Washington. By C. C. Thom and H. F. Holtz. July, 1915.
124. Bud weevils and other bud-eating insects of Washington. By M. A. Yothers. Feb., 1916.
125. Preliminary note on leaf invasions by *Bacillus amylovorus*. By F. D. Heald. Sept., 1915.
126. Bunt or stinking smut of wheat. By F. D. Heald and H. M. Woolman. Nov., 1915.
127. Twenty-fifth annual report for the year ending June 30, 1915. [By I. D. Cardiff.] Dec., 1915.
128. Forage crops in central Washington. By M. A. McCall. Jan., 1916.
129. Oats in Washington. By E. G. Schafer and E. F. Gaines. Mar., 1916.
130. The dipterous family Scatopsidae. By A. L. Melander. Apr., 1916.
131. Evaporation of apples. By J. S. Caldwell. May, 1916. See 148.
132. Isolation and cultivation of *Bacterium tuberculosis* on a synthetic culture medium. By C. A. Magoon. May, 1916.
133. A soil survey of the proposed Palouse irrigation project. By H. F. Holtz. Nov., 1916.
134. Sheep husbandry in the Pacific northwest. By William Hislop and C. E. Howell. Jan., 1917.
135. Inheritance in wheat, barley, and oat hybrids. By E. F. Gaines. Mar., 1917.
136. Twenty-sixth annual report for the year ending June 30, 1916. [By I. D. Cardiff.] Jan., 1917.
137. The coulee cricket (*Peranabrus scabricollis* Thomas): General discussion and photographs. By A. L. Melander.—Miscellaneous notes on the biology of the coulee cricket. By A. L. Yothers. Jan., 1917.
138. Adams branch experiment station: First annual report for the year ending June 30, 1916. [By M. A. McCall.] Feb., 1917.
139. Microchemical studies in the progressive development of the wheat plant. By Sophia H. Eckerson. Mar. 1917.
140. Field pea production. By E. G. Schafer and E. F. Gaines. Mar., 1917.
141. Barley in Washington. By E. G. Schafer and E. F. Gaines. Mar., 1917.
142. Gluten formation in the wheat kernel. By G. A. Olson. Mar., 1917.
143. The dipterous families Sepsidae and Piophilidae. By A. L. Melander and Anthony Spuler. Apr., 1917.
144. Wheat and flour investigations, V. By G. A. Olson. Mar., 1917.
145. The estimation of sulfur in plant material and soil. By G. A. Olson. Apr., 1917.
146. Factors influencing the water requirements of plants. By C. C. Thom and H. F. Holtz. June, 1917.
147. A new method for the preparation of pectin. By J. S. Caldwell. Apr., 1917.
148. The evaporation of fruits and vegetables. By J. S. Caldwell. June, 1917. Includes a revision of 131 and Popular Bul. 102.
149. Preparation and use of pure cultures for legume inoculation. By C. A. Magoon and B. F. Dana. Apr., 1918.
150. Studies on the morphology of wheat. By G. H. Jensen. Mar., 1918.
151. The wind dissemination of the spores of bunt or stinking smut of wheat. By F. D. Heald and D. C. George. Dec., 1918.
152. Not published.
153. Twenty-eighth annual report for the year ending June 30, 1918. [By George Severance.] Jan., 1919.
154. Sugar beets under irrigation in Washington. By F. J. Sievers and E. G. Schafer. Mar., 1919.
155. Twenty-ninth annual report for the year ending June 30, 1919. [By E. C. Johnson and others.] Mar., 1920.
156. A study of goitre and associated conditions in domestic animals. By J. W. Kalkus. July, 1920.
157. Pea straw for fattening beef cattle. By Howard Hackedorn and Jerry Sotola. Sept., 1920.
158. Thirtieth annual report for the year ending June 30, 1920. [By E. C. Johnson and others.] Nov., 1920.

POPULAR BULLETINS.

1. Announcements. By R. W. Thatcher. Jan., 1908.
2. The sulphur-lime wash. By A. L. Melander. Jan., 1908. See 28.
3. Pruning fruit trees. By W. S. Thornber. Feb., 1908.
4. Notes on swine management. By W. A. Linklater. Mar., 1908.
5. Spraying for the codling moth. By A. L. Melander. Mar., 1908.
6. The milling quality of Washington wheat, I. By R. W. Thatcher. May, 1908.
7. Summary of the soil survey of the State. By R. W. Thatcher. June, 1908.
8. Orchard cover crops. By W. S. Thornber. July, 1908.
9. Some new hybrid wheats. By E. E. Elliott and C. W. Lawrence. Aug., 1908.
10. The construction and filling of silos. By W. A. Linklater. Sept., 1908.
11. Commercial potato growing. By A. G. Craig. Oct., 1908.
12. The care of milk on the farm. By I. P. Whitney. Nov., 1908.
13. Spraying calendar for 1909. By R. K. Beattie and A. L. Melander. Jan., 1909.
14. The planting of the apple orchard. By W. S. Thornber. Mar., 1909.
15. Methods of tillage for dry farming. By George Severance. Mar., 1909.
16. The sulphur-lime wash. By A. L. Melander and R. K. Beattie. Mar., 1909. See 28.
17. The single spray for the codling moth. By A. L. Melander. Apr., 1909.
18. Growing raspberries and blackberries in Washington. By W. S. Thornber. Apr., 1909.
19. The use of fertilizer lime. By R. W. Thatcher. May, 1909.
20. Summary of experiment station work, reprinted from the seventeenth annual report [for 1906–07]. By E. A. Bryan. July, 1909.
21. Experiment station's hybrid wheats. By R. W. Thatcher. Oct., 1909.
22. Tillage in its relation to soil moisture. By C. C. Thom. Oct. 20, 1909.
23. Trees in Washington. By W. S. Thornber. Nov. 1, 1909.
24. The pruning of apple trees. By W. S. Thornber. Dec. 1, 1909.
25. Gooseberries for the home garden or commercial orchard. By W. S. Thornber. Dec. 10, 1909.
26. Currants for the home garden or commercial plantation. By W. S. Thornber. Dec. 15, 1909.
27. Spraying calendar for 1910. By R. K. Beattie and A. L. Melander. [Jan., 1910.]
28. The sulphur-lime wash. By A. L. Melander and R. K. Beattie. Mar., 1910. A new edition of 2 and 16.
29. The milling quality of Washington wheats, II. By R. W. Thatcher. Apr., 1910.
30. Spraying for the codling moth. By A. L. Melander. May, 1910.
31. Clover in the Palouse country. By George Severance. Sept., 1910.
32. The manurial value of different legumes. By R. W. Thatcher. Nov. 1, 1910.
33. Spraying calendar for 1911. By R. K. Beattie and A. L. Melander. Jan. 1, 1911.
34. The soils of Washington. By R. W. Thatcher. Feb. 15, 1911.
35. Killing ground squirrels. By W. D. Foster. Feb. 15, 1911.
36. Field peas on a Palouse wheat farm. By George Severance. Mar. 15, 1911.
37. Commercial fertilizers. By Elton Fulmer. Apr. 10, 1911.
38. Corn growing in Washington. By George Severance. Apr. 20, 1911. See 60.
39. The milling quality of Washington wheats, III. By R. W. Thatcher. July 25, 1911.
40. The char-pit method of destroying stumps. By H. W. Sparks. Aug. 1, 1911.
41. Butter making on the farm. By A. B. Nystrom. Dec. 15, 1911.
42. Alfalfa seed production. By R. W. Thatcher. Dec. 30, 1911.
43. Spraying calendar for 1912. By R. K. Beattie and A. L. Melander. Jan. 1, 1912.
44. Some problems in soil fertility. By George Severance. Apr. 1, 1912.
45. The control of the codling moth. By A. L. Melander. Apr. 1, 1912.
46. Silos and silage. By R. C. Ashby. June 1, 1912.
47. How to make bread from soft wheat flour. By G. A. Olson. June 10, 1912.
48. The prevention of the stinking smut of wheat. By H. B. Humphrey. Oct. 10, 1912.
49. Experiments in fertilizing alfalfa. By R. W. Thatcher and G. A. Olson. Nov. 10, 1912.
50. Experiments with field peas and soy beans. By P. J. White. Jan. 30, 1913.
51. Commercial arsenates of lead and lime-sulphur. By R. W. Thatcher. Feb. 20, 1913.
52. Spraying calendar for 1913: Pests and diseases of the apple, pear, peach, plum, cherry, etc. By A. L. Melander and H. B. Humphrey. [Feb., 1913.]
53. Cause of variation in per cent of fat of market cream from farm separators. By V. R. Jones. May 19, 1913.
54. Preserving eggs. By G. A. Olson. Aug. 12, 1913. Superseded by 114.
55. Cleanliness and cold as applied to the dairy. By A. B. Nystrom. Aug. 24, 1913.
56. "Fire blight" of pear and apple. By J. G. Hall. Sept. 11, 1913.
57. Prune growing in southwestern Washington. By O. M. Morris. Feb., 1914.
58. Sheep for Washington farms. By R. C. Ashby. Sept. 13, 1913.
59. Spraying calendar for 1914: Pests and diseases of the apple, pear, peach, plum, cherry, etc. By J. G. Hall and M. A. Yothers. [Jan., 1914.]
60. Corn growing in Washington. By George Severance. Feb. 4, 1914.
61. The peach twig borer: An important enemy of stone fruits. By M. A. Yothers. Feb. 10, 1914.
62. Potato growing in Washington. By O. M. Morris, J. G. Hall, and M. A. Yothers. Feb. 15, 1914.
63. Swine husbandry in Washington. By R. C. Ashby and C. F. Monroe. July 20, 1914.
64. Winter sprays: Sulphur-lime wash and crude oil emulsions. By A. L. Melander. Feb., 1914. See 107.
65. "Fire blight." By J. G. Hall. Feb., 1914. A post card.
66. Onion culture. By O. M. Morris. March 10, 1914.
67. Top grafting of fruit trees. By O. M. Morris and C. B. Sprague. Mar. 11, 1914.
68. Report on chemical composition of wheat. By G. A. Olson. Mar., 1914.
69. Dry farming in Washington. By C. C. Thom and H. F. Holtz. Apr. 1, 1914.
70. The alfalfa weevil (*Phytonomus posticus* Cyll.). By W. O. Ellis. June 10, 1914.
71. Preparation of fruit exhibits. By R. J. Barnett. June 21, 1914.
72. Handling apples for storage. By W. J. Young. Aug., 1914.
73. Stinking smut in wheat. By H. M. Woolman. Sept. 10, 1914.
74. Lice and mites. By Helen D. Whitaker. Oct., 1914.
75. The Babcock test and its application. By R. E. Hundertmark. June, 1915.
76. Winter egg production. By Helen D. Whitaker. Dec., 1914.
77. Spraying calendar for 1915: Pests and diseases of the apple, pear, peach, plum, cherry, etc. By A. L. Melander and D. C. George. Jan., 1915.
78. The san Jose scale insect (*Aspidiotus perniciosus*). By A. L. Melander. Jan., 1915.
79. Pruning. By O. M. Morris. Feb., 1915.
80. Fire blight. By I. D. Cardiff. Feb., 1915.
81. An efficient alfalfa ditcher. By L. M. Lampson and Byron Hunter. Feb., 1915.
82. The yellow blight of the tomato. By D. C. George. Mar., 1915.

83. Hints on goose culture. By Helen D. Whitaker. Mar., 1915.
84. Care of brood sow. By William Hislop. Mar., 1915.
85. A movable hog house. By William Hislop. Mar., 1915.
86. Turkeys. By Helen D. Whitaker. Mar., 1915.
87. Profitable hog feeding. By William Hislop. Apr., 1915.
88. Wheat silage. By J. R. Shinn. Apr., 1915.
89. Control of tumbling mustard. By R. G. Adams and Bryon Hunter. Apr., 1915.
90. Farm manure: Methods of preservation and application. By G. A. Olson. May, 1915.
91. Essentials for growth of chicks. By Helen D. Whitaker. June, 1915.
92. Feeding dairy cows in Washington. By A. B. Nystrom. July, 1915.
93. Rural sanitation. By C. A. Magoon. Nov., 1915.
94. Contagious abortion in cows. By J. W. Kalkus. July, 1915.
95. The dairy barn and milk house, how to construct them. By R. E. Hundertmark and A. B. Nystrom. Sept. 1, 1915.
96. Butter-making on the farm. By A. B. Nystrom and R. E. Hundertmark. Oct., 1915.
97. Dairy herd records, their value, and how to keep them. By A. B. Nystrom and R. E. Hundertmark. Oct., 1915.
98. Hotbed construction. By C. B. Sprague. Jan., 1916.
99. Ground squirrel control. By W. T. Shaw. Feb., 1916.
100. The control of fruit pests and diseases. By A. L. Melander and F. D. Heald. Feb., 1916.
101. Controlling the coulee cricket. By A. L. Melander. Mar., 1916.
102. Some possibilities for the utilization of low grade and surplus fruit. By J. S. Caldwell. May, 1916.
103. Canning without sugar. By J. S. Caldwell. July, 1916.
104. Cost of pumping for irrigation. By O. L. Waller. Aug., 1916.
105. The possibilities of sugar beet culture in Washington. By I. D. Cardiff. Aug., 1916.
106. Potato growing in Washington: Potato growing. By O. M. Morris.—Potato diseases. F. D. Heald.—Potato insects. By M. A. Yothers. Feb., 1917.
107. Winter sprays: Lime-sulphur sprays and crude-oil emulsions. By A. L. Melander. Feb., 1917.
108. Tree planting in eastern Washington. By O. M. Morris. Mar. 10, 1917.
109. Celery culture. By F. W. Allen. Mar. 13, 1917.
110. Cabbage and cauliflower culture. By C. B. Sprague. Mar. 14, 1917.
111. Bean culture. By A. L. Strausz. Mar. 18, 1917.
112. Home preparation of breakfast foods and flour from whole grain. By G. A. Olson. Nov., 1917.
113. Potatoes, increase the yield by (1) better cultural methods, (2) the control of diseases, (3) the control of insect pests. By R. J. Barnett, F. D. Heald, and A. L. Melander. Apr., 1918.
114. Two methods of preserving eggs. By G. A. Olson. May, 1918.
115. The stinking smut of wheat. By F. D. Heald. Aug., 1918.
116. Two important varieties of winter wheat: A comparison of Red Russian and Hybrid 128. By E. F. Gaines. Jan., 1919.
117. The prevention of goitre (big neck) and hairlessness of new-born domestic animals. By J. W. Kalkus. Oct. 14, 1919.
118. The cost of a squirrel and squirrel control. By W. T. Shaw. Jan., 1920.
119. Head smut of corn and sorghum. By B. F. Dana and G. L. Zundel. Feb., 1919.
120. Prune growing in western Washington. By O. M. Morris. June, 1920.

BULLETINS, SPECIAL SERIES.

1. An experiment in clearing logged-off land by the aid of a donkey engine in 1908. By W. H. Lawrence. 1909.
2. Forage plants for western Washington. By W. H. Lawrence and H. L. Blanchard. 1910.
3. Root diseases caused by *Armillaria mellea* in the Puget Sound country. By W. H. Lawrence. 1910.
4. Practical poultry buildings. By H. L. Blanchard. 1910. Revised edition 1911.
5. Club root of cabbage and allied plants. By W. H. Lawrence. 1910.
6. Thousand-headed kale and marrow cabbage. By L. J. Chapin. Feb., 1912.
7. A report covering the work of the western Washington experiment station from November 1, 1907 to April 1, 1911. By W. H. Lawrence. 1912.
8. The cost and methods of clearing land in western Washington. By Harry Thompson. 1912.
9. Potato growing. By O. M. Morris. Mar., 1912.

GENERAL INDEXES.

Index to Popular Bulletins 1 to 100. By H. B. Clees. Aug., 1916.

WEST VIRGINIA.

West Virginia Agricultural Experiment Station, Morgantown.

BULLETINS.

1. Organization and work of station. By J. A. Myers. July, 1888.
2. The history, properties, source of the ingredients, mode of application, and uses of commercial fertilizers. By A. R. Whitehill. Oct., 1888.
3. Birds of West Virginia. By W. D. Doan. Dec., 1888.
4. The creamery industry: Its adaptability to West Virginia. By A. C. Magruder. Mar., 1889.
5. The selection of milch cows. By A. C. Magruder. June, 1889.
6. Six months' experience in running a creamery; improved process of handling cream and churning. By J. A. Myers. 1889.
7. Experiments upon wheat; experiments upon fruit trees; experiments upon garden seeds, etc.; experiments upon grasses and forage crops; experiments upon miscellaneous subjects. By J. A. Myers. 1890.
8. Summary of meteorological observations and reports of correspondents on condition of agriculture. By J. A. Myers [and others]. June, 1890.
9. Additional reports upon wheat distributed in 1889; meteorological report for July; reports of correspondents upon meteorology and crops for July. By J. A. Myers [and others]. July, 1890.
10. Meteorological report for August; reports of correspondents upon meteorology and crops for August. By J. A. Myers [and others]. Aug., 1890.
11. Meteorological report for September; reports of correspondents upon meteorology and crops for September. By J. A. Myers [and others]. Sept., 1890.
12. The Canada thistle (*Cnicus arvensis* (L) Hoffm.). By C. F. Millspaugh. Dec., 1890. [Imprint] 1891.
13. The creamery industry. By J. A. Myers. Jan., 1891.

14. Farm and garden insects and experiments with remedies; notes of the season. By A. D. Hopkins. Feb., 1891.
15. Raspberry gouty-gall beetle or red-necked agrilus (*Agrilus ruficollis* Fabr.). By A. D. Hopkins. Mar., 1891.
16. Preliminary investigations of insect ravages: Yellow locust. (Forest and shade tree insects, I.) By A. D. Hopkins. Apr., 1891.
17. Preliminary report: Black spruce. (Forest and shade tree insects, II.) By A. D. Hopkins. May, 1891.
18. Law and regulations concerning the sale of commercial fertilizers in the State of West Virginia; analyses. By J. A. Myers. Sept., 1891.
19. Your weeds and your neighbor's: Weeds as fertilizers. By C. F. Millspaugh. Nov., 1891.
20. Potato culture and fertilization and tests of some varieties of tomatoes. By D. D. Johnson. Jan., 1892.
21. Injurious insects and plant diseases. By A. D. Hopkins and C. F. Millspaugh. Apr., 1892.
22. Your weeds and your neighbor's: Distribution of our weeds; bad points of weeds; weeds as fodder for stock; chemical weed exterminators. By C. F. Millspaugh. Feb., 1892.
23. Your weeds and your neighbor's: Illustrated descriptive list of weeds. By C. F. Millspaugh. May, 1892.
24. Flora of West Virginia. By C. F. Millspaugh. June, 1892.
25. Plat experiments with commercial fertilizers on wheat. By D. D. Johnson. Aug., 1892.
26. Law and regulations concerning sale of commercial fertilizers in the State of West Virginia; analyses. [By J. A. Myers and R. J. J. De Roode.] Sept., 1892.
27. Notes on pruning. By F. W. Rane. Nov., 1892.
28. Plat experiments with commercial fertilizers on corn. By D. D. Johnson. Dec., 1892.
29. Experiments on potatoes at the station; experiments on corn at the outstations. By D. D. Johnson. Jan., 1893.
30. Address and notes on sheep. By A. D. Hopkins, 1893.
31. Catalogue of West Virginia Scolytidæ and their enemies. By A. D. Hopkins. Apr., 1893.
32. Catalogue of West Virginia forest and shade tree insects. By A. D. Hopkins. May, 1893.
33. Subirrigation in the greenhouse. By F. W. Rane. Sept., 1893.
34. Fertilizer analyses for the year ending December 31, 1893. By J. A. Myers and R. J. J. De Roode. Dec., 1893.
35. Defects in wood caused by insects. By A. D. Hopkins. Jan., 1894.
36. Black holes in wood. By A. D. Hopkins. Feb., 1894.
37. Electro-horticulture with the incandescent lamps. By F. W. Rane. July, 1894.
38. Potatoes; potato blight; potato scab. By F. W. Rane. Nov., 1894.
39. Vegetables. By F. W. Rane. Jan., 1895.
40. Commercial fertilizers. By B. H. Hite. Dec., 1895.
41. Potatoes. By L. C. Corbett. Jan., 1896.
42. Vegetables. By L. C. Corbett. Feb., 1896.
43. Why, when, what, and how to spray. By L. C. Corbett. Mar., 1896.
44. Practical entomology: Insects injurious to farm and garden crops, the character of the injury, the insect causing it, the remedy, briefly and plainly stated. By A. D. Hopkins and W. E. Rumsey. Apr., 1896.
45. Chickens. By J. A. Myers. Dec., 1896.
46. Fertilizer analyses. By B. H. Hite. Dec., 1896.
47. Apples. By L. C. Corbett. Dec., 1896.
48. Raspberries. By L. C. Corbett. Dec., 1896.
49. Vegetables. By L. C. Corbett. Mar., 1897.
50. The periodical cicada in West Virginia. By A. D. Hopkins. Jan., 1898. See 68.
51. Commercial fertilizers. By B. H. Hite. Jan., 1898.
52. Strawberries. By L. C. Corbett. Mar., 1898.
53. Commercial fertilizers. By J. H. Stewart and B. H. Hite. Dec., 1898.
54. Nursery hints. By L. C. Corbett. Jan., 1899.
55. Sugar beet investigations in 1898. By J. H. Stewart and B. H. Hite. Mar., 1899.
56. Report on investigations to determine the cause of unhealthy conditions of the spruce and pine from 1880–1893. By A. D. Hopkins. Apr., 1899.
57. Commercial fertilizers. By B. H. Hite and T. F. Watson. May, 1899.
58. The effect of pressure in the preservation of milk, a preliminary report. By B. H. Hite. June, 1899.
59. Whole corn compared with corn meal for fattening hogs. By J. H. Stewart and Horace Atwood. June, 1899.
60. Poultry experiments. By J. H. Stewart and Horace Atwood. June, 1899.
61. Sheep feeding experiments. By J. H. Stewart and Horace Atwood. Sept., 1899.
62. A study of the effect of incandescent gas light on plant growth. By L. C. Corbett. Oct., 1899.
63. Commercial fertilizers, 1899. By J. H. Stewart and B. H. Hite. Jan., 1900.
64. Sugar beet investigation in 1899. By J. H. Stewart and B. H. Hite. Jan., 1900.
65. Commercial fertilizers [Jan.-Mar., 1900]. By J. H. Stewart and B. H. Hite. Apr., 1900.
66. Fruit diseases and how to treat them. By L. C. Corbett. Feb., 1900.
67. The Hessian fly in West Virginia and how to prevent losses from its ravages. By A. D. Hopkins. Aug., 1900. See 69.
68. The periodical cicada or seventeen-year locust in West Virginia. By A. D. Hopkins. Sept., 1900. A revision of 50.
69. Report on examination of wheat stubble from different sections of the State; the joint worm in wheat. By A. D. Hopkins. Oct., 1900. Supplements 67.
70. Spraying: Results of the season, 1900. By L. C. Corbett. Nov., 1900.
71. Poultry experiments. By J. H. Stewart and Horace Atwood. Dec., 1900.
72. Commercial fertilizers [1900]. By J. H. Stewart and B. H. Hite. Jan., 1901.
73. Poultry experiments: Loss of weight in eggs during incubation. By J. H. Stewart and Horace Atwood. Feb., 1901.
74. Cold storage. By L. C. Corbett. Mar., 1901.
75. Apple districts of West Virginia. By L. C. Corbett. Apr., 1901.
76. Commercial fertilizers [Jan. 1-May 2, 1901]. By J. H. Stewart and B. H. Hite. May 2, 1901.
77. The new fertilizer law. By J. H. Stewart. Sept., 1901.
78. Treatment for San José scale. By J. H. Stewart. Jan., 1902.
79. Commercial fertilizers, 1901. By J. H. Stewart and B. H. Hite. Jan., 1902.
80. Fertilizers: Sources and composition. By B. H. Hite. Apr., 1902.
81. Vegetable gardening in the mountain glades. By L. C. Corbett and K. C. Davis. Apr., 1902.
82. Peach growing in West Virginia. By K. C. Davis. Apr., 1902.

83. Poultry experiments. By J. H. Stewart and Horace Atwood. Sept., 1902.
84. Experiments with buckwheat and oats. By J. H. Stewart and Horace Atwood. Jan., 1903.
85. Commercial fertilizers: Complete report for 1902. By J. H. Stewart and B. H. Hite. Dec., 1902.
86. Cranberries in West Virginia. By L. C. Corbett. Apr., 1903.
88. [i. e. 87]. Greenhouses. By L. C. Corbett. May, 1903.
88. Poultry experiments. By J. H. Stewart and Horace Atwood. Aug., 1903.
89. Rural water supply with a study of the Monongahela River supply at Morgantown. By C. D. Howard. Sept., 1903.
90. Sheep feeding experiments: notes on parasites. By J. H. Stewart and Horace Atwood. Oct., 1903.
91. Commercial fertilizers: Report for 1903. By J. H. Stewart and B. H. Hite. Nov., 1903.
92. Commercial fertilizers: Report for 1903. By J. H. Stewart and B. H. Hite. Dec., 1902.
93. Mixtures and appliances for spraying. By T. C. Johnson. Nov., 1904.
94. Diseases of melons and cucumbers during 1903 and 1904. By J. L. Sheldon. Dec., 1904.
95. Commercial fertilizers: Complete report for 1904. By J. H. Stewart and B. H. Hite. Dec., 1904.
96. A report on plant diseases of the state. By J. L. Sheldon. June 30, 1905.
97. Commercial fertilizers: Complete report for 1905. By J. H. Stewart and B. H. Hite. Dec., 1905.
98. Raising chicks artificially. By J. H. Stewart and Horace Atwood. Jan., 1906.
99. Experiments with fertilizers. By J. H. Stewart and Horace Atwood. Feb., 1906. See also 155.
100. The grape curculio. By F. E. Brooks. Mar., 1906.
101. Experiments in the manuring of a meadow. By J. H. Stewart and Horace Atwood. Mar., 1906.
102. Poultry experiments: The value of skim milk for egg production White Leghorns versus mongrels. By J. H. Stewart and Horace Atwood. May, 1906.
103. Occurrence of barium in the Ohio valley brines and its relation to stock poisoning. By C. D. Howard. June, 1906.
104. The ripe rot or mummy disease of guavas. By J. L. Sheldon. Apr. 1, 1906.
105. Tubercles on legumes with and without cultures. By J. L. Sheldon. June 1, 1906.
106. Feeding experiments with milch cows. By J. H. Stewart and Horace Atwood. June 1, 1906.
107. A test of different sprays for the San José scale. By W. E. Rumsey and F. E. Brooks. June, 1907.
108. Commercial fertilizers: Complete report for 1906. By J. H. Stewart and B. H. Hite. Dec., 1906.
109. Feeding grain to milch cows at pasture. By J. H. Stewart and Horace Atwood. Aug., 1907.
110. The grapevine root borer. By F. E. Brooks. Nov., 1907.
111. Bacteria in milk and artificial refrigeration for dairymen. By J. H. Stewart and Horace Atwood. Jan. 1, 1908.
112. Experiment with fertilizers. By J. H. Stewart and Horace Atwood. Feb. 1, 1908. See also 155.
113. Notes on the habits of mice, moles, and shrews; a preliminary report. By F. E. Brooks. Jan., 1908.
114. Commercial fertilizers: Complete report for 1907. By J. H. Stewart and B. H. Hite. Dec., 31, 1907.
115. Poultry experiments: A record of six hundred hens. By J. H. Stewart and Horace Atwood. Apr., 1908.
116. Starting young orchards: Orchard notes. By W. M. Munson.—Enemies of young fruit trees. By W. E. Rumsey and F. E. Brooks.—Poultry in the orchard. By Horace Atwood. Apr. 1, 1908.
117. Tomato notes. By W. M. Munson. June, 1908.
118. Commercial fertilizers: Complete report for 1908. By J. H. Stewart and B. H. Hite. Dec., 1908.
119. The grapecane gall maker and the grapecane girdler. By F. E. Brooks. Jan., 1909.
120. Cabbage worms and suggestions for destroying them. By W. E. Rumsey and F. E. Brooks. Apr., 1909.
121. Apple enemies and how to fight them. By W. M. Munson. Apr., 1909.
122. The farmer's home garden. By A. L. Dacy. May, 1909.
123. Diseases of garden crops and their control. By N. J. Giddings. May 18, 1909.
124. Some factors influencing the vigor of incubator chickens. By J. H. Stewart and Horace Atwood. Aug., 1909.
125. Commercial fertilizers: Complete report for 1909. By B. H. Hite and F. B. Kunst. Jan., 1910.
126. Three snout beetles that attack apples: Plum curculio, apple curculio, apple weevil. By F. E. Brooks. Jan., 1910.
127. Spraying for the codling moth: Eastern and western methods compared. (A preliminary report.) By W. E. Rumsey. Mar., 1910.
128. Snout beetles that injure nuts. By F. E. Brooks. Mar., 1910.
129. Construction of a silo. By Horace Atwood. July, 1910.
130. Construction of a modern poultry house and report of experiments in hopper feeding laying hens. By Horace Atwood. Sept., 1910.
131. Plat experiments with fertilizers. By J. H. Stewart and Horace Atwood. Nov., 1910. See also 155.
132. Commercial fertilizers: A complete report for 1910. By B. H. Hite and F. B. Kunst. Dec., 1910.
133. Suggestions for spraying. By W. E. Rumsey, N. J. Giddings and A. L. Dacy. Apr., 1911.
134. Experiments in the production of sanitary milk. By Horace Atwood and N. J. Giddings. June, 1911.
135. West Virginia as a poultry State. By Horace Atwood. Sept., 1911.
136. The apple orchard from planting to bearing age. By A. L. Dacy. Feb., 1912.
137. The chestnut bark disease. By N. J. Giddings. Mar., 1912.
138. Commercial fertilizers inspection 1911. By B. H. Hite and F. B. Kunst. Apr., 1912.
139. Packing apples and peaches. By W. H. Alderman. Sept., 1912.
140. Potato culture in West Virginia: Possibilities as a truck crop; essentials of culture. By A. L. Dacy. Apr., 1913.
141. The rejuvenation of old orchards. By W. H. Alderman. Apr., 1913.
142. Fertilizer experiments with tomatoes. By A. L. Dacy. Nov., 1913.
143 A market garden and truck survey of the Ohio and Kanawha River Valleys. By A. L. Dacy. Apr., 1914.
144. Agricultural production in West Virginia. By O. M. Johnson. Mar., 1914.
145. Some factors affecting the weight, composition, and hatchability of hen eggs. By Horace Atwood. May, 1914.
146. The effect of pressure on certain microorganisms encountered in the preservation of fruits and vegetables. By B. H. Hite, N. J. Giddings, and C. E. Weakley, jr. Oct., 1914.
147. An orchard survey of Jefferson County. By R. R. Jeffries. Nov., 1914.
148. A poultry survey of Jackson County. By F. S. Jacoby. Dec., 1914.
149. Small fruits for home and commercial planting. By L. F. Sutton. Apr., 1915.
150. The fertilization of peach orchards. By W. H. Alderman. May, 1915.
151. An apple orchard survey of Berkeley County. By E. C. Auchter. June, 1915.
152. White burley tobacco: Experiments and cultural directions. By I. S. Cook and C. H. Scherffius. June, 1916.
153. An agricultural survey of Brooke County. By O. M. Johnson and A. J. Dadisman. Aug., 1915.
154. Apple rust. By N. J. Giddings and Anthony Berg. Aug., 1915.

155. Experiments with fertilizers. By F. E. Bear. Oct., 1915. A summary of work reported in 99, 112, 131, with subsequent data.
156. A second report on the university farm garden. By A. L. Dacy. Apr., 1916.
157. Silos and silage. By E. W. Sheets.—Building instructions for home-made silos. By G. L. Oliver. July, 1916.
158. The apple as affected by varying degrees of dormant and seasonal pruning. By W. H. Alderman and E. C. Auchter. July, 1916.
159. Methods in soil analysis. By F. E. Bear and R. M. Salter. Aug., 1916.
160. The residual effects of fertilizers. By F. E. Bear and R. M. Salter. Aug., 1916.
161. Analyses of one hundred West Virginia soils. By F. E. Bear and R. M. Salter. Aug., 1916.
162. Five years' investigations in apple thinning. By E. C. Auchter. Jan., 1917.
163. Amount and cost of labor required for growing crops in West Virginia. By O. M. Johnson and A. J. Dadisman. Nov., 1916.
164. Pruning fruit trees. By W. H. Alderman and E. C. Auchter. Mar., 1917.
165. Potato and tomato diseases. By N. J. Giddings. Sept., 1917.
166. Certain characteristics of hen eggs. By Horace Atwood and C. E. Weakley, jr. Sept., 1917.
167. Orchard spraying versus dusting. By N. J. Giddings. Nov., 1918.
168. Analyses of West Virginia soils. (Second report.) By R. M. Salter and C. F. Wells. Dec., 1918.
169. A study of the factors governing the efficiency of distribution and rate of discharge of spray nozzles. By H. L. Crane. Jan., 1919.
170. Infection and immunity in apple rust. By N. J. Giddings. Dec., 1918.
171. Experiments with buckwheat. By F. W. Stemple. Aug., 1919.
172. Soybean experiments. By F. W. Stemple. Aug., 1919.
173. A two-year farm management survey of Greenbrier and Monroe Counties. By A. J. Dadisman and C. F. Sarle. Feb., 1920.
174. The fertilization of apple orchards. By W. H. Alderman and H. L. Crane. Apr., 1920.
175. West Virginia trees. By A. B. Brooks. Sept., 1920.

SPECIAL BULLETINS.

[1.] Potash and paying crops [compiled by A. de Ghequier. 1890. Identical with Georgia Sta. Bul. 9; Maryland Sta. Special Bul. [B]; Tennessee Sta. Special Bul. D.
2. Proceedings connected with the celebration upon the completion of the station building and the organization of the Sheep Breeders and Wool Growers Association, the State Horticultural Society, and the State Dairy Association, Apr. 5, 1894. 1895.
3. San José scale in West Virginia. By T. E. Brooks and A. E. Rumsey. Mar., 1905.
4. Spraying for San José scale. By W. E. Rumsey and Fred Brooks. Nov., 1907.

WISCONSIN.

Agricultural Experiment Station of the University of Wisconsin, Madison

BULLETINS.

1. Sweet skim milk: Its value as a food for pigs and calves. Aug., 1883.
2. Amount and condition of seed corn in Wisconsin. Apr., 1884.
3. Composition and digestibility of fodders. June, 1884.
4. Experiments on milk production. Sept., 1884.
5. Analyses of feeding stuffs. Apr., 1885.
6. Experiments on calf feeding. By W. A. Henry.—Analyses of fertilizers. By H. P. Armsby. July, 1885.
7. Experiments on calf feeding. By W. A. Henry.—The Cooley system of creaming milk. By H. P. Armsby. Oct., 1885.
8. Oil meal vs. corn meal for milk. By H. P. Armsby. Dec., 1885.
9. Report on oats, potatoes, and corn for 1885. By W. A. Henry. Mar., 1886.
10. Tests of dairy cows. By H. P. Armsby. Oct., 1886.
11. Report on wheat, oats, barley, potatoes, and corn for 1886. Apr., 1887.
12. The oil test for cream. By H. P. Armsby and F. G. Short. Oct., 1887.
13. Report on wheat, oats, barley, corn, and potatoes for 1887. By L. H. Adams.—The station vineyard. By W. A. Henry. Feb., 1888.
14. Artificial fertilizers and land plaster. By A. M. Babcock. Apr., 1888.
15. Ensilage vs. corn fodder for milk production. By F. W. Woll. May, 1888.
16. A new method for determining fat in milk. By F. G. Short. July, 1888. See 36.
17. Report on corn, oats, barley, and potatoes. By L. H. Adams.—Grape growing. By W. A. Henry. Nov., 1888.
18. The constitution of milk and some of the conditions which affect the separation of cream. By S. M. Babcock. Jan., 1889.
19. Notes on ensilage. By W. A. Henry, L. H. Adams, and F. G. Short. Apr., 1889.
20. Noxious weeds of Wisconsin. By E. S. Goff. July, 1889. See 76.
21. Comparative value of warm and cold water for milch cows in winter. By F. H. King. Oct., 1889.
22. Report on oats and barley for 1889. By L. H. Adams.—Report on potatoes for 1889. By E. S. Goff. Jan., 1890.
23. Prevention of apple scab. By E. S. Goff. Apr., 1890.
24. A new method for the estimation of fat in milk, especially adapted to creameries and cheese factories. By S. M. Babcock. July, 1890.
25. Feeding bone meal and hard wood ashes to hogs living on corn. By W. A. Henry. Oct., 1890.
26. Sugar-beet culture in Wisconsin. By W. A. Henry and F. W. Woll. Jan., 1891.
27. The feeding value of whey. By W. A. Henry. Apr., 1891.
28. The construction of silos. By F. H. King. July, 1891.
29. Creaming experiments. By S. M. Babcock. Oct., 1891.
30. Sugar-beet experiments in Wisconsin for 1891. By F. W. Woll. Jan., 1892.
31. Notes on the use of the Babcock test and the lactometer. By S. M. Babcock. Apr., 1892. See 36.
32. Feeding grain to lambs: cottonseed meal compared with oil meal for feeding lambs. By J. A. Craig. July, 1892.
33. Rations for dairy cows. By F. W. Woll. Oct., 1892. See also 38.
34. Preventive treatment for apple scab, downy mildew, and brown rot of grape, potato blight and smut of wheat and oats. By E. S. Goff. Jan., 1893.
35. Insects and diseases injurious to cranberries. By E. S. Goff. Apr., 1893.
36. Directions for using the Babcock milk test and the lactometer. By S. M. Babcock. July, 1893. Supersedes 16, 31.

37. **The Russian thistle.** By E. S. Goff. Oct., 1893.
38. One hundred American rations for dairy cows. By F. W. Woll. Jan., 1894. A continuation of 32.
39. Noxious weeds. By E. S. Goff. Apr., 1894. See 76.
40. Tuberculosis and the tuberculin test. By H. L. Russell. July, 1894.
41. Grain feeding lambs for market. By J. A. Craig. Aug., 1894.
42. Destructive effects of winds on sandy soils and light sandy loams, with methods for protection. By F. H. King. Oct., 1894.
43. The agricultural, horticultural, and livestock features of a portion of Wisconsin tributary to Superior. The agricultural possibilities of Douglas County and northwest Wisconsin. By F. H. King.—Horticultural possibilities of northwest Wisconsin. By E. S. Goff.—Dairy and sheep farming at Superior. By J. A. Craig. Jan., 1895.
44. Pasteurization of milk and cream for direct consumption. By H. L. Russell. Apr., 1895.
45. Apple culture: Notes and data from 172 orchards. By E. S. Goff. July, 1895.
46. Power tests of centrifugal cream separators. By A. W. Richter. Oct., 1895.
47. Wisconsin's fertilizer law. By W. A. Henry. Nov., 1895.
48. The Conn culture (B 41) in butter making. By E. H. Farrington and H. L. Russell. Jan., 1896.
49. The maintenance of soil fertility: Commercial fertilizers. By F. W. Woll. Mar., 1896.
50. The hot-water treatment for the prevention of smut on oats, wheat, and barley. By E. S. Goff. Mar., 1896.
51. **The marls of Wisconsin.** By F. W. Woll. June, 1896.
52. A comparison of the Babcock test and the gravimetric method of estimating fat in skim milk, the alkaline tablet test of acidity in milk or cream. By E. H. Farrington. July, 1896.
53. Analyses of licensed commercial fertilizers. By F. W. Woll. July, 1896.
54. The restoration of the consistency of pasteurized cream. By S. M. Babcock and H. L. Russell. Aug., 1896.
55. Beet sugar production: Possibilities for a new industry in Wisconsin. By W. A. Henry. Dec., 1896. Reprinted with some changes as Ohio Sta. Bul. 75. Second edition, Mar., 1897.
56. Statistics from fifty-two Wisconsin separator creameries. By E. H. Farrington. Mar., 1897.
57. Analyses of licensed fertilizers. By F. W. Woll. Mar., 1897.
58. The rape crop: Its growth and value for soiling and fattening sheep and swine. By J. A. Craig. Apr., 1897.
59. The construction of silos and the making and handling of silage. By F. H. King. May, 1897.
60. The cheese industry: Its development and possibilities in Wisconsin. By S. M. Babcock and H. L. Russell. May, 1897.
61. The constitution of milk with especial reference to cheese production. By S. M. Babcock. Sept., 1897.
62. Tainted or defective milks: Their causes and methods of prevention. By H. L. Russell. Sept., 1897.
63. The culture of native plums in the northwest. By E. S. Goff. Oct., 1897. See also 87.
64. Sugar-beet investigations in Wisconsin during 1897. By F. W. Woll. Jan., 1898.
65. A bacterial rot of cabbage and allied plants. By H. L. Russell. Feb., 1898.
66. Analyses of licensed commercial fertilizers. By F. W. Woll. Apr., 1898.
67. Factory tests for milk. By S. M. Babcock, H. L. Russell, and J. W. Decker. June, 1898.
68. One year's work done by a sixteen foot geared windmill. By F. H. King. June, 1898.
69. Pasteurization as applied to butter making. By E. H. Farrington and H. L. Russell. Sept., 1898.
70. Construction of cheese curing rooms for maintaining temperatures of 50° to 65° F. By F. H. King. Jan., 1899.
71. Sugar beet investigations in Wisconsin during 1898. By F.W. Woll. Feb., 1899.
72. Small fruits in 1898. By E. S. Goff. Apr., 1899.
73. Analyses of licensed commercial fertilizers, 1899. By F. W. Woll and Alfred Vivian. Apr., 1899.
74. A study of dairy salt. By F. W. Woll. May, 1899.
75. **Testing cows at the farm.** By E. H. Farrington. June, 1899.
76. Noxious weeds of Wisconsin. By E. S. Goff. July, 1899. Supersedes 29, 39.
77. Effects of the February freeze of 1899 upon nurseries and fruit plantations in the Northwest. By E. S. Goff. Aug., 1899.
78. The history of a tuberculous herd of cows. By H. L. Russell. Aug., 1899.
79. Principles of construction and maintenance of country roads. By F. H. King. Sept., 1899.
80. The character and treatment of swamp or humus soil. By F. H. King and J. A. Jeffery. Jan., 1900.
81. Analyses of licensed commercial fertilizers, 1900. By F. W. Woll and Alfred Vivian. Apr., 1900.
82. Experiments in grinding with small steel feed mills. By F. H. King and J. A. Jeffery. Apr., 1900.
83. Silage and the construction of modern silos. By F. H. King. May, 1900.
84. Bovine tuberculosis in Wisconsin. By H. L. Russell and E. G. Hastings. Mar., 1901.
85. Development and distribution of nitrates and other soluble salts in cultivated soils. By F. H. King and A. R. Whitson. Mar., 1901.
86. Analyses of licensed commercial fertilizers, 1901. By R. H. Shaw and Alfred Vivian. Mar., 1901.
87. Native plums. By E. S. Goff. Apr., 1901. Supplements 63.
88. Dairy industry in Wisconsin. By H. L. Russell. Sept., 1901.
89. The law regulating the sale and analysis of concentrated feeding stuffs in Wisconsin. By W. A. Henry. Nov., 1901.
90. Concentrated feeding stuffs and fertilizers licensed for sale in Wisconsin, 1902. By F. W. Woll. Jan., 1902.
91. Oat smut in Wisconsin: Prevalence and method of eradication. By R. A. Moore. Feb., 1902.
92. Licensed fertilizers and concentrated feeding stuffs, 1902. By F. W. Woll and Alfred Vivian. Apr., 1902.
93. Development and distribution of nitrates in cultivated soils. By F. H. King and A. R. Whitson. May, 1902.
94. Curing of cheddar cheese, with especial reference to cold curing. By S. M. Babcock and H. L. Russell. Aug., 1902.
95. Some observations on sheep breeding from the experiment station flock records. By W. L. Carlyle and T. F. McConnell. Aug., 1902.
96. Investigations of methods of milking. By F. W. Woll. Sept., 1902.
97. Licensed commercial feeding stuffs, 1902. By F. W. Woll and G. A. Olson. Dec., 1902.
98. On the prevention of oat smut and potato scab. By R. A. Moore. Feb., 1903.
99. Concentrated feeding stuffs and fertilizers licensed for sale in Wisconsin, 1903. By F. W. Woll. Feb., 1903.
100. Licensed fertilizers and feeding stuffs, 1903. By F. W. Woll and G. A. Olson. Apr., 1903.
101. Shrinkage of cold cured cheese during ripening. By S. M. Babcock, H. L. Russell, and C. S. Baer. July, 1903.
102. Studies in milk production based on records of cows in the university dairy herd, 1898–1903. By W. L. Carlyle and F. W. Woll. Aug., 1903.
103. Soiling crops for dairy cows in Wisconsin. By W. L. Carlyle, J. R. Danks, and G. E. Morton. Sept., 1903.

104. The food requirements of pigs from birth to maturity. By W. L. Carlyle. Sept., 1903.
105. The improvement of home grounds. By Frederic Cranefield. Oct., 1903. Second edition, Dec., 1904.
106. Licensed commercial feeding stuffs, 1903. By F. W. Woll and G. A. Olson. Nov., 1903.
107. Official tests of dairy cows, 1902-3. By F. W. Woll. Dec., 1903.
108. Trees and shrubs for shade and ornament. By Frederic Cranefield. Jan., 1904.
109. Concentrated feeding stuffs and fertilizers licensed for sale in Wisconsin, 1904. By F. W. Woll. Jan., 1904.
110. Spraying fruit trees, with notes on the common insects and fungus diseases infesting orchards. By E. P. Sandsten. Apr., 1904.
111. Oat smut and its prevention. By R. A. Moore. Mar., 1904.
112. Alfalfa in Wisconsin. By R. A. Moore. Mar., 1904.
113. Licensed commercial fertilizers and feeding stuffs, 1904. By F. W. Woll and G. A. Olson. Apr., 1904.
114. A lesson in bovine tuberculosis. By H. L. Russell. June, 1904.
115. The quality of cheese as affected by rape and other green forage plants fed to dairy cows. By U. S. Baer and W. L. Carlyle. Sept., 1904.
116. On the relation of food to the production of milk and butter fat by dairy cows. By F. W. Woll. Nov., 1904.
117. The relation of food to dairy production. By F. W. Woll. Dec., 1904. A popular edition of 116.
118. Licensed commercial feeding stuffs, 1904. By F. W. Woll and G. A. Olson. Dec., 1904.
119. A report on cranberry investigations. By A. R. Whitson, E. P. Sandsten, L. P. Haskins, and H. Ramsay. Feb., 1905.
120. Concentrated feeding stuffs and fertilizers licensed for sale in Wisconsin, 1905. By F. W. Woll. Jan., 1905.
121. Alfalfa, or lucern. By R. A. Moore, A. L. Stone, and G. A. Olson. Feb., 1905.
122. Licensed commercial fertilizers and feeding stuffs, 1905. By F. W. Woll and G. A. Olson. Apr., 1905.
123. The beet-sugar industry of Wisconsin. By F. W. Woll. Apr., 1905.
124. Report on tobacco investigations in Wisconsin for 1903 and 1904. By E. P. Sandsten. Apr., 1905.
125. Silo construction. By G. N. Knapp. Apr., 1905.
126. Two ways of treating tuberculosis in herds. By H. L. Russell. June, 1905.
127. The principles and practice of horse breeding. By A. S. Alexander. Aug., 1905.
128. A Swiss cheese trouble caused by a gas-forming yeast. By H. L. Russell and E. G. Hastings. Sept., 1905.
129. Some creamery problems. By E. H. Farrington. Sept., 1905.
130. Licensed commercial feeding stuffs, 1905. By F. W. Woll and G. A. Olson. Dec., 1905.
131. Official tests of dairy cows, 1904-5. By F. W. Woll. Dec., 1905.
132. The manufacture of whey butter at Swiss cheese factories. By E. H. Farrington. Dec., 1905. Also a German translation.
133. Distribution of tuberculosis in suspected and non-suspected herds in Wisconsin, with an appendix on the value and use of the tuberculin test. By H. L. Russell and E. G. Hastings. Feb., 1906.
134. Licensed commercial fertilizers and feeding stuffs, 1906. By F. W. Woll and G. A. Olson. Apr., 1906.
135. The spraying of potatoes for prevention of leaf blight and rot. By E. P. Sandsten and J. G. Milward. Apr., 1906.
136. Practical directions for preserving native fruits and vegetables. By Mrs. L. H. Adams and E. P. Sandsten. Apr., 1906.
137. Conditions which affect the time of the annual flowering of fruit trees. By E. P. Sandsten. Apr., 1906.
138. Land drainage. By A. R. Whitson and E. R. Jones. Aug., 1906. See 229.
139. Principles and maintenance of soil fertility. By A. R. Whitson and C. W. Stoddart. Sept., 1906.
140. Development of factory dairying in Wisconsin, with map showing location of cheese factories and creameries. [accompanied by a separate folded map.] By H. L. Russell and U. S. Baer. Sept., 1906.
141. A report on the horse-breeding industry of Wisconsin. By A. S. Alexander. Nov., 1906.
142. Licensed commercial feeding stuffs, 1906. By F. W. Woll and G. A. Olson. Dec., 1906.
143. The spread of tuberculosis through factory skim milk with suggestions as to its control. By H. L. Russell. Feb., 1907.
144. Official tests of dairy cows, 1905-6. By F. W. Woll and R. T. Harris. Jan., 1907.
145. Relative value of shelled corn and corn meal for fattening pigs: Summary of a ten years' feeding trial, By W. A. Henry and D. H. Otis. Jan., 1907.
146. Drainage conditions of Wisconsin. By A. R. Whitson and E. R. Jones. Apr., 1907.
147. Report on the northern substations for 1906. By E. J. Delwiche. Apr., 1907.
148. The pasteurization and the inspection of creamery and cheese factory by-products. By E. H. Farrington and E. G. Hastings. Apr., 1907.
149. Licensed commercial fertilizers and feeding stuffs, 1907. By F. W. Woll and G. A. Olson. Apr., 1907.
150. Sugar beet experiments during 1906. By F. W. Woll and C. W. Stoddart. Apr., 1907.
151. Condimental stock foods. By F. W. Woll. May, 1907.
152. A comparison of aniline and anatto butter colors in butter making. By E. H. Farrington and Martin Meyers. June, 1907.
153. Portable hog houses. By J. G. Fuller and C. A. Cocck. Nov., 1907.
154. A creamery method for the determination of water in butter. By E. H. Farrington. Sept., 1907.
155. The distribution of stallions in Wisconsin. By A. S. Alexander. Dec., 1907.
156. A simple test for casein in milk and its relation to the dairy industry. By E. B. Hart. Nov., 1907.
157. Licensed commercial feeding stuffs, 1907. By F. W. Woll and G. A. Olson. Dec., 1907.
158. The grade stallion situation in Wisconsin. By A. S. Alexander. Mar., 1908.
159. The cranberry insects of Wisconsin. By C. B. Hardenberg. May, 1908.
160. Tests of dairy cows, 1906-07. By F. W. Woll and R. T. Harris. Mar., 1908.
161. Grains and forage crops for northern Wisconsin. By R. A. Moore and E. J. Delwiche. Mar., 1908.
162. Rusty cans and their effect upon milk for cheese making. By G. A. Olson. Apr., 1908.
163. Licensed commercial fertilizers, with list of licensed feeding stuffs, 1908. By F. W. Woll and G. A. Olson. Apr., 1908.
164. The King system of ventilation. By C. A. Ococke. Dec., 1908.
165. Vaccination against tuberculosis in cattle with bovovaccine (Von Behring). By H. L. Russell and Conrad Hoffmann. Nov., 1908.
166. Disinfection and commercial disinfectants. By M. P. Ravenel and K. W. Smith. Feb., 1909.
167. The university dairy herd management and records, 1907-8. By G. C. Humphrey and F. W. Woll. Sept., 1908.
168. Spraying potatoes against blight and the potato beetle. By E. P. Sandsten and J. G. Milward. Nov., 1908.
169. Progress in Wisconsin horse breeding with lists of stallion licenses and transfers for 1908. By A. S. Alexander. Dec., 1908.
170. Licensed commercial feeding stuffs, 1908. By F. W. Woll. Feb., 1909.
171. Report of the director, 1908. By H. L. Russell. Feb., 1909.

172. Tests of dairy cows, 1907–8. By F. W. Woll and R. T. Harris. Feb., 1909.
173. Milking machine experiments. By F. W. Woll and G. C. Humphrey. Feb., 1909.
174. The conservation of phosphates on Wisconsin farms. By A. R. Whitson and C. W. Stoddard. Apr., 1909.
175. A three-year campaign against bovine tuberculosis in Wisconsin. By H. L. Russell and Conrad Hoffmann. May, 1909.
176. The improvement of Wisconsin tobacco through seed selection. By E. P. Sandsten. May, 1909.
177. Potato culture in northern Wisconsin. By E. P. Sandsten and E. J. Delwiche. July, 1909.
178. The field pea in Wisconsin. By R. A. Moore and E. J. Delwiche. July, 1909.
179. The eradication of farm weeds with iron sulphate. By R. A. Moore and A. L. Stone. July, 1909.
180. Fertilizers for Wisconsin farms. By F. W. Woll. Aug., 1909.
181. The propagation of pure starters for butter and cheese making. By E. G. Hastings. Sept., 1909.
182. The Wisconsin butter and cheese scoring exhibitions. By E. H. Farrington and M. Michels. Oct., 1909.
183. Growing clover for seed and forage in northern Wisconsin. By R. A. Moore and E. J. Delwiche, Nov., 1909.
184. Practical swine management. By J. G. Fuller.—Common diseases and parasites of swine. By A. S. Alexander. Nov., 1909.
185. Sanitary cow stalls. By C. A. Ococke. Nov., 1909.
186. Suggestions for the improvement of Wisconsin horses. By A. S. Alexander. Dec., 1909.
187. The university dairy herd, 1908–9. By G. C. Humphrey and F. W. Woll. Dec., 1909.
188. Wisconsin horse-breeding statistics with stallion licenses for 1909. By A. S. Alexander. Dec., 1909.
189. Community breeders' associations for dairy cattle improvement. By G. C. Humphrey. Feb., 1910.
190. Common insect pests of fruits in Wisconsin. By J. G. Moore. Feb., 1910.
191. A decade of official tests of dairy cows, 1899–1909, with tests conducted during 1908–9. By F. W. Woll and R. T. Harris. Feb., 1910.
192. The dairy calf at meal time. By D. H. Otis. Feb., 1910.
193. Report of the director, 1909. By H. L. Russell. Feb., 1910.
194. Licensed commercial feeding stuffs, 1909. By F. W. Woll. Feb., 1910.
195. New and improved tests of dairy products. By S. M. Babcock and E. H. Farrington.—The preparation of buttermilk curd. By J. L. Sammis. Feb., 1910.
196. Opportunities for profitable farming in northern Wisconsin. By E. J. Delwiche. July, 1910.
197. Methods of paying for milk at cheese factories. By S. M. Babcock, E. H. Farrington, and E. B. Hart. July, 1910.
198. Methods of renting farm lands in Wisconsin. By H. C. Taylor. July, 1910.
199. The principles and practice of land drainage. By E. R. Jones. July, 1910. See. 229.
200. The selection of feeds for dairy cows. By F. W. Woll and G. C. Humphrey. Jan., 1911. A popular edition of Research Bul. 13.
201. Planting the commercial orchard. By J. G. Moore. Feb., 1911.
202. The management of heavy clay soils. By A. R. Whitson and E. J. Delwiche. Feb., 1911. Revised edition, May, 1914.
203. Report of the director, 1910. By H. L. Russell. Feb., 1911.
204. The improvement of sandy soils. By A. R. Whitson and F. J. Sievers. Feb., 1911. Revised May, 1914.
205. The development of marsh soils. By A. R. Whitson and F. J. Sievers. Feb., 1911. Second edition, July, 1914.
206. Tobacco culture in Wisconsin. By James Johnson. Apr., 1911.
207. The management of a bearing orchard. By J. G. Moore. Apr., 1911. Second edition, Dec., 1912.
208. Crop demonstrations on state and county farms. By C. P. Norgord. May, 1911.
209. The prices of farm products. By H. C. Taylor. May, 1911.
210. The progress of the dairy industry in Wisconsin. By H. C. Taylor and C. E. Lee. June, 1911.
211. Buttermilk cheesemaking at the creamery. By J. L. Sammis. May, 1911. See 239.
212. Barley culture in Wisconsin. By R. A. Moore and A. L. Stone. May, 1911. Revised edition, Mar., 1914.
213. Cranberry bog construction for Wisconsin. By O. G. Malde. June, 1911.
214. Concrete silo construction. By C. A. Ocock and F. M. White. July, 1911.
215. Poultry house construction. By J. G. Halpin and C. A. Ocock. Aug., 1911.
216. The use of explosives in clearing land. By J. F. Kadonsky. Nov., 1911.
217. Practical lessons from the management of the university dairy herd. By G. C. Humphrey and F. W. Woll. Dec., 1911.
218. Report of the director, 1911. By H. L. Russell. Dec., 1911.
219. Cranberry bog management for Wisconsin. By O. G. Malde. Apr., 1912.
220. Better cream through grading; a new butter moisture test. By G. H. Benkendorf. May, 1912.
221. Getting the most profit from farm manure. By E. B. Hart. June, 1912.
222. Crop rotation for northern Wisconsin. By E. J. Delwiche. June, 1912. Second edition, Mar., 1916.
223. The climate of Wisconsin and its relation to agriculture. By A. R. Whitson and O. E. Baker. July, 1912.
224. Selecting steers for feeding. By J. L. Tormey. June, 1912.
225. Commercial varieties of potatoes for Wisconsin. By J. G. Milward. July, 1912.
226. The Wisconsin dairy cow competition. By F. W. Woll and R. T. Harris. July, 1912. See Research Bul. 26.
227. The Wisconsin nursery and orchard inspection service, 1910–1912. By J. G. Sanders. Dec., 1912.
228. Report of the director, 1911–12. By H. L. Russell. Jan., 1913.
229. The right drain for the right place. By E. R. Jones. Apr., 1913. A revision of 138, 199.
230. Soil acidity and liming. By A. R. Whitson and W. W. Weir. May, 1913. Second edition, May, 1916.
231. The marketing of Wisconsin cheese. By H. C. Taylor, W. A. Schoenfeld, and G. S. Wehrwein. Apr., 1913.
232. Fitting yearling wethers and lambs for exhibition. By G. C. Humphrey and Frank Kleinheinz. Aug., 1913.
233. Wheat growing in Wisconsin. By E. J. Delwiche and B. D. Leith. Sept., 1913.
234. Rural social centers in Wisconsin. By C. J. Galpin. Jan., 1914.
235. Soiling crops versus silage for dairy cows in summer. By F. W. Woll, G. C. Humphrey, and A. C. Oosterhuis. Mar., 1914.
236. Soy beans, an important Wisconsin crop. By R. A. Moore and E. J. Delwiche. Apr., 1914.
237. The control of diseases and insects of tobacco. By James Johnson. May, 1914.
238. Agricultural co-operation. By B. H. Hibbard. June, 1914. Revised edition, Jan., 1917.
239. Three creamery methods for making buttermilk cheese. By J. L. Sammis. June, 1914. Includes a revision of 211.
240. Report of the director, 1913. By H. L. Russell. June, 1914.

241. Some improved dairy tests and methods: One way to determine the overrun in the making of ice cream; a burette for calibrating Babcock test bottles. By G. H. Benkendorf.—A wire cheese curd knife. By G. H. Benkendorf and A. T. Bruhn.—An attachment for the milk sediment tester. By A. C. Baer.—Cheese-making tests with homogenized milk. By J. L. Sammis. July, 1914.
242. Pork production in Wisconsin. By J. G. Fuller. Sept., 1914.
243. What has been done with the tuberculin test in Wisconsin. By E. G. Hastings. Oct., 1914.
244. Organization and construction of creameries and cheese factories. By E. H. Farrington and G. H. Benkendorf. Mar., 1915.
245. The disposal of creamery sewage. By E. H. Farrington and G. J. Davis, jr. Feb., 1915.
246. Making whey butter at cheddar cheese factories. By J. L. Sammis. Jan., 1915.
247. Farm credit in Wisconsin. By B. H. Hibbard and F. Robotka.—Amortization schedules. By E. B. Skinner. Jan., 1915.
248. Strawberry culture in Wisconsin. By J. G. Moore. Mar., 1915.
249. A new test for soil acidity. By Emil Truog. Feb., 1915. See 312.
250. The year's progress of the experiment station: Report of the director, 1914. By H. L. Russell. Apr., 1915.
251. Markets and prices of Wisconsin cheese. By B. H. Hibbard and Asher Hobson. Apr., 1915.
252. Potato seed certification in Wisconsin. By J. G. Milward. Apr., 1915.
253. Some facts about concentrated feeds. By W. H. Strowd. June, 1915.
254. State seed inspection and weed control, 1914. By A. L. Stone. Apr., 1915.
255. Facts about fertilizers licensed for sale in Wisconsin; reports of analyses for 1914. By W. H. Strowd. July, 1915.
256. The marketing of Wisconsin potatoes. By H. C. Taylor. July, 1915.
257. Apple rust and its control in Wisconsin. By L. R. Jones and E. T. Bartholomew. July, 1915.
258. Distribution of public service stallions in Wisconsin in 1915. By A. S. Alexander. Sept., 1915.
259. Alfalfa growing in Wisconsin. By R. A. Moore and L. F. Graber. Oct., 1915.
260. First aid to the settler. By E. J. Delwiche. Oct., 1915.
261. Poultry raising in Wisconsin. By J. G. Halpin and J. B. Hayes. Feb., 1916. Revised edition, June, 1918.
262. Ice cream making. By A. C. Baer. Feb., 1916.
263. Sheep raising in Wisconsin. By Frank Kleinheinz. Mar., 1916.
264. Beekeeping in Wisconsin. By N. E. France and L. V. France. Mar., 1916.
265. Commercial fertilizers: What they contain and their uses. By W. H. Strowd. May, 1916.
266. Barns for Wisconsin dairy farms. By F. M. White and C. I. Griffith. Apr., 1916. See 325.
267. Facts for the feed buyer. By W. H. Strowd. May, 1916.
268. Work done by the experiment station in 1915: Experimental work of the station; agricultural extension service. By H. L. Russell. May, 1916.
269. Managing the orchard. By J. G. Moore. June, 1916.
270. The marketing of Wisconsin butter. By B. H. Hibbard and Asher Hobson. June, 1916.
271. Rural clubs in Wisconsin. By C. J. Galpin and D. W. Sawtelle. Aug., 1916.
272. Keep our hillsides from washing. By A. R. Whitson and T. J. Dunnewald. Aug., 1916.
273. Distribution of public service stallions in Wisconsin in 1916. By A. S. Alexander. Sept., 1916.
274. Judging dairy cows. By G. C. Humphrey. Oct., 1916.
275. The work of the experiment station and agricultural extension service for 1916: The experiment station. By H. L. Russell and F. B. Morrison.—Carrying agricultural science to the farm. By H. L. Russell and K. L. Hatch. Jan., 1917.
276. Correct payment for cheese factory milk by the Babcock test. By J. L. Sammis. Jan., 1917.
277. The management of tobacco soils. By James Johnson. Feb., 1917.
278. The country church an economic and social force. By C. J. Galpin. Jan., 1917.
279. Fertilizers sold in Wisconsin. By W. H. Strowd. Apr., 1917.
280. Potato growing in Wisconsin. By J. G. Milward. Apr., 1917.
281. How feed inspection helps the farmer. By W. H. Strowd. June, 1917.
282. Cooperation in Wisconsin. By B. H. Hibbard and Asher Hobson. May, 1917.
283. Distribution of public service stallions in Wisconsin in 1917. By A. S. Alexander. Sept., 1917
284. Tile drainage on the farm. By E. R. Jones and O. R. Zeasman. Nov., 1917.
285. Marketing Wisconsin milk. By B. H. Hibbard and H. E. Erdmann. Dec., 1917.
286. Control of cherry leaf spot in Wisconsin. By G. W. Keitt. Feb., 1918.
287. New facts on feeding cattle for successful growth and reproduction. By E. B. Hart, Harry Steenbock, and G. C. Humphrey. Feb., 1918.
288. Rural relations of high schools: Social relations. By C. J. Galpin.—Agricultural relations. By J. A. James. Mar., 1918.
289. Soybeans: A crop worth growing. By R. A. Moore and E. J. Delwiche. Apr., 1918.
290. Farm making in upper Wisconsin: Hints for the settler. By B. G. Packer and E. J. Delwiche. Mar., 1918
291. Milk necessary for the nation's welfare. By E. B. Hart and Harry Steenbock. June, 1918.
292. Price-fixing and the cost of farm products By H. C. Taylor. May, 1918.
293. Wisconsin's hemp industry. By A. H. Wright. May, 1918.
294. Serving Wisconsin farmers in war time. (Report of the director of agricultural extension service.) By H. L. Russell and K. L. Hatch. July, 1918.
295. Getting rid of the stumps. By F. M. White and E. R. Jones. Aug., 1918.
296. Contagious abortion questions answered. By F. B. Hadley. Sept., 1918.
297. Hairless pigs: The cause and remedy. By E. B. Hart and Harry Steenbock. Sept., 1918.
298. Prune the cherry trees. By R. H. Roberts. Mar., 1919.
299. Sandy soils and how to farm them. By A. R. Whitson and H. W. Ullsperger. Mar., 1919.
300. War prices and farm profits. By H. C. Taylor and S. W. Mendum. Mar., 1919.
301. Wisconsin wins: Annual report of the Agricultural Extension Service for 1917-18. By H. L. Russell and K. L. Hatch. Apr., 1919.
302. Service to Wisconsin: Annual report of the director of the experiment station for 1916-17 and 1917-18. By H. L. Russell and F. B. Morrison. Aug., 1919.
303. Common insecticides: Their practical value. By H. F. Wilson. June, 1919.
304. Stem rust of grains and the barberry in Wisconsin. By A. G. Johnson and J. G. Dickson. Aug., 1919.
305. Wheat growing in Wisconsin. By E. J. Delwiche and B. D. Leith. Sept., 1919.
306. The soils of northern Wisconsin. By A. R. Whitson, T. J. Dunnewald, and Carl Thompson. Apr., 1919.
307. The rural community fair. By C. J. Galpin and Emily F. Hoag. Nov., 1919.
308. Alfalfa in Wisconsin. By R. A. Moore and L. F. Graber. Dec., 1919.
309. Marsh soils. By A. R. Whitson and H. W. Ullsperger. Dec., 1919.
310. The pea moth (*Laspeyresia nigricana* Steph.): How to control it. By C. L. Fluke. Apr., 1920.
311. Sorghum for sirup in Wisconsin. By A. H. Wright. Apr., 1920.
312. Testing soils for acidity. By Emil Truog. June, 1920. Revised and amplified from 249.

313. The occurrence of red calves in black breeds of cattle. By L. J. Cole and Sarah V. H. Jones. June, 1920.
314. Wisconsin livestock shipping associations. By B. H. Hibbard, L. G. Foster, and D. G. Davis. Aug., 1920.
315. Cottage cheese and buttermilk cheese: Their manufacture and sale. By J. L. Sammis. June, 1920.
316. Farm labor in Wisconsin. By H. C. Taylor and J. D. Black. June, 1920.
317. Off-year apple bearing and apple spur growth. By R. H. Roberts. July, 1920.
318. Credit needs of settlers in upper Wisconsin. By R. T. Ely, B. H. Hibbard, and A. B. Cox. Oct., 1920.
319. Experiments in farming: Annual report of the director of the experiment station, 1918–19. By H. L. Russell and F. B. Morrison. Sept., 1920.
320. Clear more land. By John Swenehart. Dec., 1920.
321. Cheesemakers save by figuring costs. By J. L. Sammis and O. A. Juve. Nov., 1920.
322. Marketing by federations. By Theodore Macklin. Dec., 1920.
323. New farm facts: Annual report of the director, 1919–20. By H. L. Russell and F. B. Morrison. Dec., 1920.

RESEARCH BULLETINS.

1. The rôle of inorganic phosphorus in the nutrition of animals. By E. B. Hart, E. V. McCollum, and J. G. Fuller. June, 1909.
2. Factors influencing the phosphate content of soils: Phosphate content of soils as affected by methods of farming. By A. R. Whitson and C. W. Stoddart.—Phosphate availability in its relation to soil acidity. By C. W. Stoddard. June, 1909.
3. The efficiency, economy and physiological effect of machine milking. By F. W. Woll and G. C. Humphrey. June, 1909.
4. Some conditions which influence the germination and fertility of pollen. By E. P. Sandsten. June, 1909.
5. The rôle of the ash constituents of wheat bran in the metabolism of herbivora. By E. B. Hart, E. V. McCollum, and G. C. Humphrey. June, 1909.
6. Studies on the bacterial and leucocyte content of milk: Bacterial content of the milk of individual animals. By E. G. Hastings and Conrad Hoffman.—The occurrence and distribution of a lactic acid organism resembling the *Bacillus bulgaricus* of yogurt. By E. G. Hastings and B. W. Hammer.—Experimental leucocytosis in the cow's udder. By Conrad Hoffman. June, 1909.
7. Factors controlling the moisture content of cheese curds. By J. L. Sammis, S. K. Suzuki and F. W. Laabs. Feb., 1910.
8. Nuclein synthesis in the animal body. By E. V. McCollum. May, 1910.
9. The nature of the acid-soluble phosphorus compounds of some important feeding materials. By E. B. Hart and W. E. Tottingham. May, 1910.
10. Some improved methods of dairy chemistry analysis: A volumetric method for the estimation of casein in cows' milk. By E. B. Hart.—The quantitative estimation of lactic acid in cheddar cheese. By S. K. Suzuki and E. B. Hart.—The relation of different acids to the precipitation of casein and the solubility of cheese curds in salt solutions. By J. L. Sammis and E. B. Hart. May, 1910.
11. The production of volatile fatty acids and esters in cheddar cheese and their relation to the development of flavor. By S. K. Suzuki, E. G. Hastings, and E. B. Hart. June, 1910.
12. Some factors concerned in the fixation of nitrogen by azotobacter. By Conrad Hoffman and B. W. Hammer. June, 1910.
13. Studies of the protein requirements of dairy cows. By F. W. Woll and G. C. Humphrey. June, 1910. See also Bul. 200.
14. Sulphur requirements of farm crops in relation to the soil and air supply. By E. B. Hart and W. H. Peterson. Apr., 1911.
15. Experiments on spore germination and infection in certain species of Oomycetes. By I. E. Melhus. June, 1911.
16. The place of economics in agricultural education and research. By H. C. Taylor. June, 1911.
17. Physiological effect on growth and reproduction of rations balanced from restricted sources. By E. B. Hart, E. V. McCollum, Harry Steenbock, and G. C. Humphrey. June, 1911.
18. A sclerotium disease of blue joint and other grasses. By A. B. Stout. June, 1911.
19. Effect of heat and oxidation on the phosphorus of the soil. By P. P. Peterson. Dec., 1911.
20. Factors influencing the availability of rock phosphate. By Emil Truog. Jan., 1912.
21. Studies of the nutrition of the pig. By E. V. McCollum and Harry Steenbock. Feb., 1912.
22. Metabolic water: Its production and rôle in vital phenomena. By S. M. Babcock. Mar., 1912.
23. Relation of soil bacteria to evaporation. By Conrad Hoffmann. Apr., 1912.
24. The diagnosis of contagious abortion in cattle by means of the complement fixation test. By F. B. Hadley and B. A. Beach. June, 1912.
25. Studies on the factors concerned in the ripening of cheddar cheese. By E. G. Hastings, A. C. Evans, and E. B. Hart. July, 1912.
26. Studies in dairy production based on the records secured in the Wisconsin dairy cow competition, 1909–11. By F. W. Woll. Oct., 1912. See also Bul. 226.
27. The manufacture of cheddar cheese from pasteurized milk. By J. L. Sammis and A. T. Bruhn. Dec., 1912.
28. Avian tuberculosis. By E. G. Hastings and J. G. Halpin. Mar., 1913.
29. Nature of the changes in the solubility and availability of phosphorus in fermenting mixtures. By W. E. Tottingham and Conrad Hoffmann. May, 1913.
30. Calcium and phosphorus supply of farm feeds and their relation to the animal's requirements. By E. B. Hart, Harry Steenbock, and J. G. Fuller. Feb., 1914.
31. The control of damping-off disease in plant beds. By James Johnson. Mar., 1914.
32. Black rot, shed burn, and stem rot of tobacco. James Johnson. June, 1914.
33. Comparative efficiency for growth of the nitrogen of alfalfa hay and corn grain. By E. B. Hart, G. C. Humphrey and F. B. Morrison.—The comparative efficiency for milk-production of the nitrogen of alfalfa hay and corn grain. By E. B. Hart, G. C. Humphrey, J. J. Willaman, and A. R. Lamb. June, 1914.
34. The social anatomy of an agricultural community. By C. J. Galpin. May, 1915.
35. The comparative effect of phosphates and sulphates on soil bacteria. By E. B. Fred and E. B. Hart. June, 1915.
36. Acidosis in omnivera and herbivora and its relation to protein storage. By Harry Steenbock, V. E. Nelson, and E. B. Hart. Sept., 1915.
37. Germination and infection with the fungus of the late blight of potato (*Phytophthora infestans*). By I. E. Melhus. Aug., 1915.
38. The control of cabbage yellows through disease resistance. By L. R. Jones and J. C. Gilman. Dec., 1915.

39. The gain in nitrogen from growth of legumes on acid soils. By E. B. Fred and E. J. Graul. Oct., 1916.
40. Some economic factors which influence rural education in Wisconsin. By Eugene Merritt and K. L. Hatch. Oct., 1916.
41. The utilization of phosphates by agricultural crops, including a new theory regarding the feeding power of plants. By Emil Truog. Nov., 1916.
42. Early blight of potato and related plants. By R. D. Rands. Aug., 1917.
43. The milling and baking qualities of Wisconsin grown wheats. By B. D. Leith. Jan., 1919.
44. Farm tenancy: An analysis of the occupancy of 500 farms. By C. J. Galpin and Emily F. Hoag. Feb., 1919.
45. The common cabbage worm in Wisconsin (*Pontia rapae* Linn.). By H. F. Wilson, R. C. Pickett, and L. G. Gentner. Aug., 1919.
46. Frost necrosis of potato tubers. By L. R. Jones, Maude Miller, and E. Bailey. Oct., 1919.
47. Farm leasing systems in Wisconsin. By B. H. Hibbard and J. D. Black. Oct., 1920.
48. Fusarium resistant cabbage. By L. R. Jones, J. C. Walker, and W. B. Tisdale. Nov., 1920.
49. Influence of rations restricted to the oat plant on reproduction in cattle. By E. B. Hart, Harry Steenbock, and G. C. Humphrey. Nov., 1920.

INDEXES.

General index of agricultural publications of the University of Wisconsin issued prior to 1894. (Wisconsin Sta., Ann. Rpt. 1892–93, p. 313–335.)

WYOMING.

Wyoming Agricultural Experiment Station, Laramie.

BULLETINS.

1. The organization and the proposed work of the station. [By Dice McLaren and others.] May, 1891.
2. Plant lice. By F. J. Niswander. Aug., 1891.
3. The sugar beet in Wyoming. By Dice McLaren and E. E. Slosson. Nov., 1891.
4. Meteorology for 1891. By B. C. Buffum. Dec., 1891.
5. Best varieties [of field crops] and breeds [of live stock] for Wyoming. By Dice McLaren and B. C. Buffum. Feb., 1892. Parts also issued separately.
6. Soils of the agricultural experiment farms. By J. D. Conley and E. E. Slosson. May, 1892.
7. Insecticides. By F. J. Niswander. July, 1892.
8. Irrigation and duty of water. By B. C. Buffum. Oct., 1892.
9. Sugar beets in 1892. By E. E. Slosson. Dec., 1892.
10. Meteorology for 1892. By B. C. Buffum. Dec. 31, 1892.
11. Crop report for 1892. By A. A. Johnson and F. J. Niswander. Feb., 1893.
12. Ground squirrels (gophers). By F. J. Niswander. Apr., 1893.
13. The feeding and management of cattle. By W. A. Henry. July, 1893. Reprinted from U. S. Dept. Agr., Bur. Anim. Indust., Special Report on Diseases of Cattle and on Cattle Feeding, 1892, p. 439–479.
14. Geology of Wyoming experimental farm and notes on mineral resources of the State. By W. C. Knight. Oct., 1893.
15. The winter-killing of trees and shrubs. By Aven Nelson. Dec., 1893.
16. Grasses and forage plants. By B. C. Buffum. Dec., 1893.
17. Crop report for 1893.—Cost and profit of growing wheat. By B. C. Buffum.—Sugar beets in 1893. By E. E. Slosson.—Garden vegetables and tobacco; progress report on fruits and trees; meteorology for 1893. By B. C. Buffum. Mar., 1894.
18. The reclamation of arid lands; the Harvey water motor. By A. A. Johnson. June, 1894.
19. Squirrel-tail grass (fox-tail), one of the stock pests of Wyoming. By Aven Nelson. Sept., 1894.
20. The artesian wells of southern Wyoming; their history and relation to irrigation. By J. D. Conley. Oct., 1894.
21. The grain smuts and potato scab. By Aven Nelson. Jan., 1895.
22. Onions; crop report, 1894; cost and profit of growing wheat; small fruits at Laramie. By B. C. Buffum. Apr., 1895.
23. Notes on climate. [By J. D. Conley.] May, 1895.
24. Water analyses. By E. E. Slosson. Aug., 1895.
25. Results of three years' experiments in cost and profit of growing wheat. By B. C. Buffum. Nov., 1895.
26. Garden peas. By B. C. Buffum. Dec., 1895.
27. Meteorology for 1895, and notes on climate from 1891 to 1896. By J. D. Conley. Mar., 1896.
28. First report on the flora of Wyoming. By Aven Nelson. May, 1896.
29. Alkali; some observations and experiments. By B. C. Buffum. July, 1896.
30. Stock-feeding experiments at Lander. By B. C. Buffum. Sept., 1896.
31. The worst weeds of Wyoming, and suggested weed legislation. By Aven Nelson. Dec., 1896.
32. Potatoes. By B. C. Buffum. Mar., 1897.
33. The composition of prepared cereal foods. By E. E. Slosson. June, 1897.
34. Fruit growing in Wyoming. By B. C. Buffum. Nov., 1897.
35. Mechanical analysis and water content of Wyoming soils. By C. B. Ridgaway. Dec., 1897.
36. Wyoming sugar beets. By E. E. Slosson and B. C. Buffum. Apr., 1898.
37. The stooling of grains. By B. C. Buffum. June, 1898.
38. Cultivated shade and forest trees. By B. C. Buffum. Sept., 1898.
39. Alkali studies, II. By E. E. Slosson and B. C. Buffum. Dec., 1898.
40. The trees of Wyoming and how to know them. By Aven Nelson. Jan., 1899.
41. Some experiments with subsoiling. By B. C. Buffum and W. H. Fairfield. Nov., 1899.
42. Some native forage plants for alkali soils. By Aven Nelson. Dec., 1899.
43. Alfalfa as a hay crop. By B. C. Buffum. Mar., 1900.
44. Alfalfa as a fertilizer. By B. C. Buffum. Apr., 1900.
45. A preliminary report on the artesian basins of Wyoming. By W. C. Knight. June, 1900. Accompanied by a folded map.
46. The brome-grasses of Wyoming. By Aven Nelson. Jan., 1901.
47. Lamb feeding experiment. By Luther Foster. Apr., 1901.
48. Experiments in wheat culture. By Luther Foster and W. H. Fairfield. May, 1901.
49. Alkali series: VI, Alkali lakes and deposits. By W. C. Knight and E. E. Slosson. June, 1901.
50. Native vines in Wyoming homes. By Aven Nelson. Mar., 1902.
51. Sheep feeding on the range; lamb feeding, second trial. By F. E. Emery. May, 1902.
52. Experiments in evaporation. By C. B. Ridgaway. Apr., 1902.

53. The measurement of water for irrigation. By B. P. Fleming. June, 1902.
54. The shrubs of Wyoming. By E. E. Nelson. July, 1902.
55. The birds of Wyoming. By W. C. Knight. Sept., 1902.
56. Food adulteration in Wyoming. By E. E. Slosson. Feb., 1903.
57. Shade tree suggestions. By Aven Nelson. Mar., 1903.
58. Growing and preparing agricultural products for exhibition. By B. C. Buffum and Aven Nelson. Apr., 1903.
59. The wheat grasses of Wyoming. By Aven Nelson and E. E. Nelson. Nov., 1903.
60. Wheat growing on the Laramie Plains. By B. C. Buffum. Dec., 1903.
61. Seepage investigations in the valley of the Laramie River. By B. P. Fleming. Mar., 1904.
62. Some food products and their adulteration. By H. G. Knight and R. B. Moudy. May, 1904.
63. Native and introduced saltbushes: Three seasons' trials. By E. E. Nelson. Aug., 1904.
64. Feeding experiments with lambs, 1903. By B. C. Buffum. Feb., 1905.
65. Wyoming forage plants and their chemical composition: Studies, No. 1. By H. G. Knight, F. E. Hepner, and Aven Nelson. May, 1905.
66. Irrigation investigations on the North Platte River in 1904. By B. P. Fleming. June, 1905.
67. Duty of water. By B. P. Fleming. Aug., 1905.
68. Ration experiments with lambs, 1904–5. By G. E. Morton. Oct., 1905.
69. Digestion experiments with wethers: Alfalfa and native hay. By H. G. Knight, F. E. Hepner, and G. E. Morton. Apr., 1906.
70. Wyoming forage plants and their chemical composition: Studies, No. 2. By H. G. Knight, F. E. Hepner, and G. E. Morton. May, 1906.
71. Some potato diseases: Their cause and control. [By Aven Nelson.] Jan., 1907.
72. Duty of water on field peas, 1906. By H. T. Nowell. Feb., 1907.
73. Ration experiments with lambs, 1905–6. By G. E. Morton. Apr., 1907.
74. Ration experiments with swine. By G. E. Morton. May, 1907.
75. The life and preservation of pitch pine fence posts. By B. C. Buffum. July, 1907.
76. Wyoming forage plants and their chemical composition: Studies, No. 3. By H. G. Knight, F. E. Hepner, and Aven Nelson. Mar., 1908.
77. Irrigation of barley. By H. T. Nowell. May, 1908.
78. Digestion experiments: Native hays, oat straw, pea hay, sweet clover, and alfalfa. By H. C. Knight, F. E. Hepner, and T. F. McConnell. June, 1908.
79. Ration experiments with lambs, 1906–7. By G. E. Morton. July, 1908.
80. Dry farming in Wyoming. By J. D. Towar. Mar., 1909.
81. Lamb feeding for 1908–09. By A. D. Faville. June, 1909.
82. Soil nitrogen. By H. G. Knight and F. A. Smith. June, 1909.
83. Barley. By L. B. McWethy. Feb., 1910.
84. Field peas. By L. B. McWethy. Mar., 1910.
85. Feeding experiments, 1909–10. By A. D. Faville. May, 1910.
86. Potatoes. By T. S. Parsons. Jan., 1911.
87. Wyoming forage plants and their chemical composition. By H. G. Knight, F. E. Hepner, and Aven Nelson. Feb., 1911.
88. Woody aster (*Xylorrhiza parryi* Gray). [By O. L. Prien, Aven Nelson, and L. C. Raiford.] Apr., 1911.
89. Feeding experiments, 1910–11. By A. D. Faville. June, 1911.
90. Reclamation by drainage: An example of reclamation from seepage and alkali by means of leaching and drainage. By J. C. Fitterer. Sept., 1911.
91. The relation of the sheep-tick flagellate (*Crithidia melophagia*) to the sheep's blood. By L. D. Swingle. Dec., 1911.
92. The value of fiber-testing machines for measuring the strength and elasticity of wool. By J. A. Hill. Jan., 1912. A more detailed report published as a supplement to Ann. Rpt., 21 (1910–11).
93. A comparison of sheep branding paints. By C. J. Oviatt. June, 1912.
94. The chemical examination of death camas. By F. W. Heyl, S. K. Loy, H. G. Knight, and O. L. Prien. July, 1912.
95. A comparison of cotswold and southdown grade lambs; fattening rations for aged ewes. By A. D. Faville. Sept., 1912.
96. Ration experiments with swine. By A. D. Faville. Oct., 1912.
97. The identification of the woody aster. [By Aven Nelson and H. G. Knight.] Apr., 1913.
98. Alfalfa hay for horses. By A. D. Faville. Apr., 1913.
99. The life history of the sheep tick (*Melophagus ovinus*). By L. D. Swingle. July, 1913.
100. Meteorology for twenty years. By H. G. Knight and J. C. Fitterer. Sept., 1913.
101. Zygadenine: The crystallin alkaloid of *Zygadenus intermedius*. By S. K. Loy, F. W. Heyl, and F. E. Hepner. Nov., 1913.
102. The morphology of the sheep tape-worm (*Thysanosoma actinoides*). By L. D. Swingle. Jan., 1914.
103. Corn versus barley in lamb rations; methods of feeding barley to lambs. By A. D. Faville. [1913?]
104. Forage crops. By T. S. Parsons. 1914.
105. The eradication of the sheep tick. By L. D. Swingle. Jan., 1915.
106. Cottonseed cake versus cold pressed cottonseed cake for beef cows; mixed grains versus cottonseed cake for growing beef cattle. By A. D. Faville. July, 1915.
107. Swine feeding. By A. D. Faville. Sept., 1915.
108. Cattle feeding. By A. D. Faville. Oct., 1915.
109. Sheep feeding. By A. D. Faville. Nov., 1915.
110. Sweet clover. By T. S. Parsons. Sept., 1916.
111. Alfalfa in Wyoming. By T. S. Parsons. Dec., 1916.
112. The poisonous properties of the two-grooved milk vetch (*Astragalus bisulcatus*): Chemical. By O. A. Beath—Physiological. E. H. Lehnert. Jan., 1917.
113. The effect of alkali upon Portland cement. By Karl Steik. Mar., 1917. See Bul. 122.
114. Swine feeding. By A. D. Faville. July, 1917.
115. Barley in Wyoming. By T. S. Parsons. Aug., 1917.
116. Winter grains. By T. S. Parsons. Nov., 1917.
117. Cattle feeding: Oat and pea silage for beef cows; oat and pea silage for growing cattle. By A. D. Faville. Dec., 1917.
118. Oats in Wyoming. By T. S. Parsons. Dec., 1918.
119. Spring wheats in Wyoming. By T. S. Parsons. Dec., 1918.
120. The chemical examination of three species of larkspurs (*Delphinium barbeyi, Delphinium glaucescens, Delphinium geyeri*). By O. A. Beath. June, 1919.
121. Swamp fever in Wyoming: Economic importance, general characteristics and control. By J. W. Scott. June, 1919.

122. The effect of alkali upon Portland cement, II. By Karl Steik. Dec., 1919. Includes much of the work reported in Bul. 113.
123. Chemical and pharmacological examination of the woody aster. By O. A. Beath. May, 1917.
124. *Sarcocystis tenella*, the muscle parasite of the sheep. By J. W. Scott and E. C. O'Roke. June, 1920.
125. The chemical examination of the silvery lupine. Preliminary report. By O. A. Beath. June, 1920.

STATE FARMS BULLETINS.

1. Spring wheat production in eastern Wyoming. By A. L. Nelson. Dec., 1920.
2. Winter wheat production in eastern Wyoming. By A. L. Nelson. Dec., 1920.

INDEX BULLETINS.

A. Indexing the first twenty-six bulletins of the station. By G. R. Hebard. July, 1896.
B. Index to Bulletins twenty-seven to thirty-seven, July, 1896-June, 1898. By G. R. Hebard. July, 1898.
C. Indexing Bulletins thirty-eight to fifty-three, Sept., 1898-June, 1902. By G. R. Hebard. July, 1902.
D. Indexing Bulletins fifty-four to seventy-five, July, 1902-July, 1907. By G. R. Hebard. July, 1907.
E. Indexing Bulletins No. one [i. e. seventy-six] to ninety-eight and Reports No. one [i. e. eighteen] to twenty-three inclusive, July, 1907-July, 1914. By J. E. Anderson. Mar., 1915

ORGANIZATION OF THE UNITED STATES DEPARTMENT OF AGRICULTURE.

February 7, 1924.

Secretary of Agriculture	HENRY C. WALLACE.
Assistant Secretary	HOWARD M. GORE.
Director of Scientific Work	E. D. BALL.
Director of Regulatory Work	W. G. CAMPBELL.
Director of Extension Work	C. W. WARBURTON.
Solicitor	R. W. WILLIAMS.
Weather Bureau	CHARLES F. MARVIN, *Chief.*
Bureau of Agricultural Economics	HENRY C. TAYLOR, *Chief.*
Bureau of Animal Industry	JOHN R. MOHLER, *Chief.*
Bureau of Plant Industry	WILLIAM A. TAYLOR, *Chief.*
Forest Service	W. B. GREELEY, *Chief.*
Bureau of Chemistry	C. A. BROWNE, *Chief.*
Bureau of Soils	MILTON WHITNEY, *Chief.*
Bureau of Entomology	L. O. HOWARD, *Chief.*
Bureau of Biological Survey	E. W. NELSON, *Chief.*
Bureau of Public Roads	THOMAS H. MACDONALD, *Chief.*
Bureau of Home Economics	LOUISE STANLEY, *Chief.*
Office of Experiment Stations	E. W. ALLEN, *Chief.*
Fixed Nitrogen Research Laboratory	F. G. COTTRELL, *Director.*
Publications	L. J. HAYNES, *in Charge.*
Library	CLARIBEL R. BARNETT, *Librarian.*
Federal Horticultural Board	C. L. MARLATT, *Chairman.*
Insecticide and Fungicide Board	J. K. HAYWOOD, *Chairman*
Packers and Stockyards Administration *Grain Futures Administration*	CHESTER MORRILL, *Assistant to the Secretary.*

This bulletin is a contribution from

Office of Experiment Stations	E. W. ALLEN, *Chief.*

O